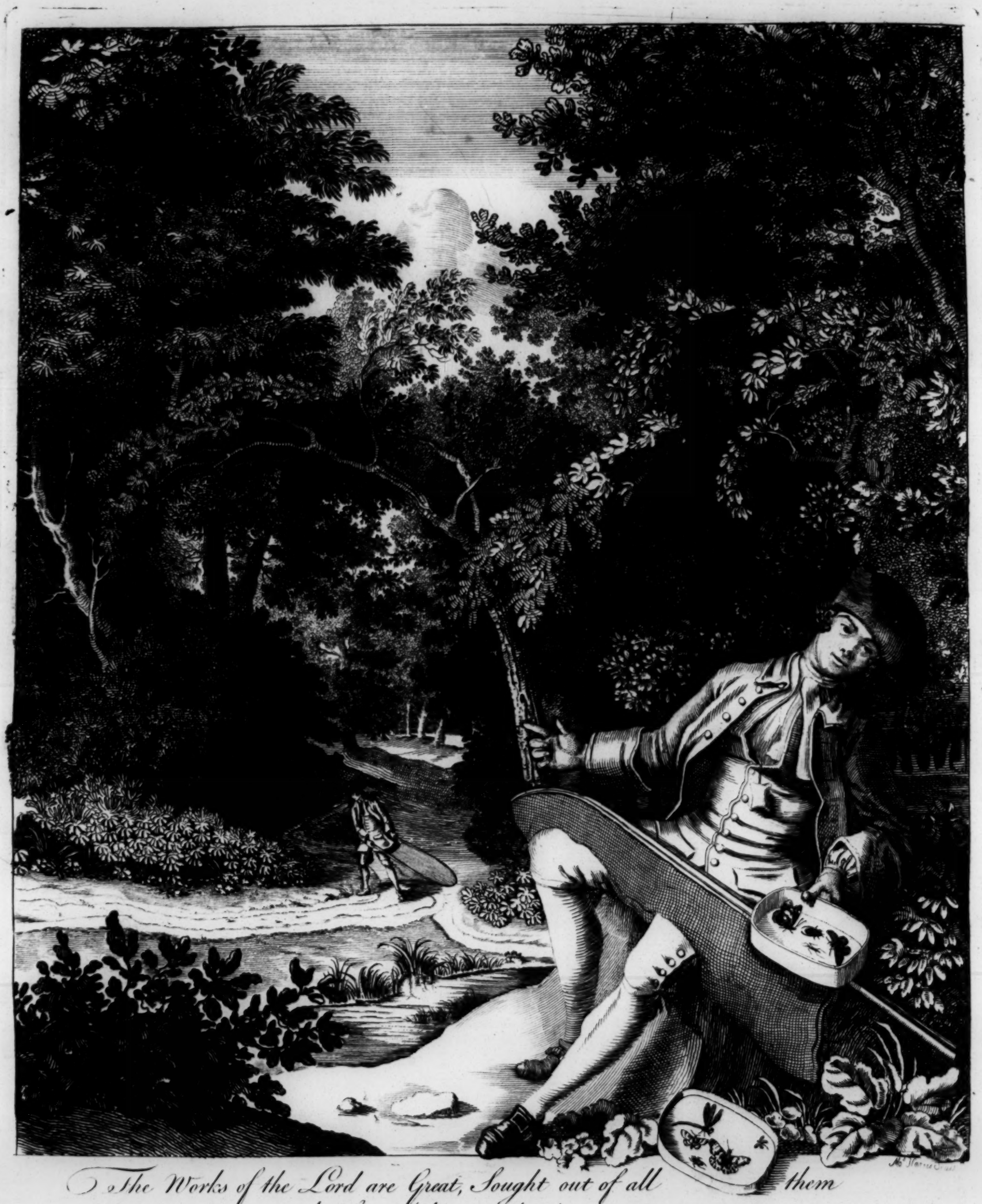


The Works of the Lord are Great, Sought out of all them that have pleasure therein, Ps CXI. v. 2.

THE AURELIAN:

OR,

NATURAL HISTORY

OF

ENGLISH INSECTS;

NAMELY,

MOTHS and BUTTERFLIES.

Together with the

PLANTS on which they FEED;

A faithful Account of their reſpective Changes; their uſual Haunts when in the winged State; and their ſtandard Names, as given and eſtabliſhed by the worthy and ingenious Society of AURELIANS.

Drawn, engraved and coloured, from the natural Subjects themſelves.

By *MOSES HARRIS*,

Secretary to the AURELIAN SOCIETY.

O Lord, how manifold are thy Works! in Wiſdom haſt thou made them all: the Earth is full of thy Riches.

LONDON:

Printed for the AUTHOR. 1766.

DEDICATION.

TO THE

PRESIDENT,

And the Reſt of the

GENTLEMEN,

THE

WORTHY MEMBERS

OF THE

AURELIAN SOCIETY.

GENTLEMEN,

IT is in Gratitude to the great Friendſhip and Encouragement this Virgin Volume of Mine has met with at your Hands, which firſt prompted me with a Deſire to lay it before you; not intending it as a Compliment to recompenſe Favour, but to ſhew my Reſpect and Eſteem to our Worthy Preſident, and my Brother *Aurelians*.

It is to your Protection then, Gentlemen, that I ſubmit this Volume, poor in Worth, hoping for your favourable Conſtruction on the many Diſappointments You and the World have met with in the Courſe of this Work, and the tedious Length of Time it has been compleating; neither can I in Juſtice to myſelf, ſay the Fault has been wholly my own, whoſe earneſt Deſires and Endeavours, it has been continually to forward

forward and compleat it; but owing to the unſteady and fallacious Behaviour of a Perſon, too nearly connected in my Concerns: Neither do I propoſe to myſelf, by complaining of his ill Treatment, to extenuate any Neglect of my own.

I ſhall, Gentlemen, in the next Place, take hold on this favourable Opportunity, to aſſure you of my conſtant Adherence in endeavouring to promote the Intereſt of the Society; and to aſſure you of my Love and Friendſhip for every of you, whoſe Regard I hold much in Eſteem, wiſhing you Succeſs in your praiſe-worthy Purſuit, not only in Collecting, but carefully conſidering the excellent Works of the Almighty and Supream Creator, which he has pronounced to be good: For my own Part, I ſhall ſtill perſevere in this my beloved Employment, and hope, if God permit, in a ſhort Time to produce to you and the Publick, a farther Account of our *Engliſh* Inſects, in which I hope for your farther Aſſiſtance and Encouragement. I remain,

GENTLEMEN,

In all Sincerity,

Your Moſt Humble, and

Obliged Servant,

MOSES HARRIS.

PREFACE.

IT is now above twenty Years ſince I firſt began to collect and purſue the Study of Inſects; the firſt Hint I received was from Mr. *Moſes Harris*, an Uncle of mine, who was then a Member of the old Society of *Aurelians*, which was held at the *Swan Tavern*, in *Change-Alley*: I was then too young to be admitted a Member, tho' the ſtrong Inclination I had to be ſearching into this Part of Natural Hiſtory, made me very deſirous: I was then but twelve Years old, ſo obliged to defer it, till Age ſhould ripen and furniſh me with ſufficient Sagacity, whereby I might become fitting for the Company of that ingenious and curious Body of People. I was, however, deprived of that Pleaſure, for not long after the great Fire happened in *Cornhill*, in which the *Swan Tavern* was burnt down, together with the Society's valuable Collection of Inſects, Books, *&c.* and all their Regalia: The Society was then ſitting, yet ſo ſudden and rapid was the impetuous Courſe of the Fire, that the Flames beat againſt the Windows, before they could well get out of the Room, many of them leaving their Hats and Canes; their Loſs ſo much diſheartened them, that altho' they ſeveral Times met for that Purpoſe, they never could collect ſo many together, as would be ſufficient to form a Society, ſo that for fourteen Years, and upward, there was no Meeting of that Sort, till Phœnix-like our preſent Society aroſe out of Aſhes of the Old. However, my Fondneſs for Inſects made me very induſtrious, and I have continually endeavour'd to take all Opportunities, to get Knowledge in the Times, Seaſons, and Manner of breeding them; Part of which Experience, join'd with the Aſſiſtance of my Friends, I do now, with all Submiſſion, lay before the Publick.

It is likely the Reader will find many Things in this Work, that may not meet with his Approbation; but as I never before attempted to engrave, I hope the Faults which may be found in the Plates will be excuſed on that Account; my Manuſcripts was at firſt ſetting out, for the firſt three Pages, corrected and put into Form by a worthy Gentleman of my Acquaintance, Mr. *Walter Wall*, by whoſe Intreaty I publiſhed this Book of Inſects. But his Affairs calling him to the *Eaſt-Indies*, I loſt at once an ingenious Friend, and a kind Aſſiſtant to this Work: Thus being left to myſelf, my Manuſcripts went rough from my Hand to the Preſs, bare of thoſe pretty Embelliſhments with which Men of a more liberal Education ſprinkle and adorn their Writings, making them pleaſing as well as edifying; but if mine may want what a more learned Hand could beſtow, yet what I have wrote is Truth, which is ever moſt Beautiful when moſt expoſed, ſo if I can but be underſtood, it will, however, have two of the moſt principal Embelliſhments intended to adorn it, *viz.* Truth, with Inſtruction. But enough of this; for as I have much to ſay, I ſhall deſire to be ſhort with that Part I count the moſt immaterial, and proceed to the Marrow of the Matter in Hand, I mean that of the Introduction: And Firſt,

That every Caterpillar produces either a Moth or a Butterfly, Nobody that has had ever ſo little Inſight into this Part of the Creation, will venture to diſpute; I mean ſuch Caterpillars as have not leſs than ten or more than ſixteen Legs; for thoſe which have more, produce what we have hitherto diſtinguiſhed by the Name of *Ichneumons*, and ſuch as have leſs commonly produce the Beetle or Chaffer Kind. But as I am here about to diſplay their Proceedings, under each of their ſeveral Changes or Appearances,

wherein they are conſidered in a General Light. I ſhall firſt begin with the Egg, taking their other Appearances in their natural Order as they follow; thinking by thus explicating on the Subject in a general Manner, the better to prepare the young AURELIAN for the Peruſal of the following Work, where each Inſect, whoſe Hiſtory is known, is particularly conſidered and repreſented in its different States.

The Females, both of Moths and Butterflies, lay their Eggs in a few Hours after Copulation, upon or contiguous to what is deſign'd to be the Food for the young Caterpillars; when they appear from the Shells, ſome produce the Caterpillars in fourteen Days, others in four or five Weeks, ſome again do not appear till the Expiration of four or five Months. When the young Caterpillars are perfect within the Shells, they eat, or rather crumble the Shell away with their Chaps, and feed on what was provided by the Parent for them; and each of theſe Caterpillars having grown to their full Size, and purged themſelves from their Dung and Filth, caſt off their laſt Skin and becomes a Chryſalis, or an Aurelia; from which a Fly or Moth is produced in the Likeneſs of its Parent, after lying in that State a certain Number of Days, Weeks or Months, according to the reſpective Species or Claſs to which they belong, and this is their general Progreſſion in which Particularities they do both agree.

Of the Eggs, and the different Manner of Laying them.

THE different Claſſes of both Moths and Butterflies, depoſite their Eggs remarkably different, ſome faſten them to the Food by a viſcous Moiſture, detached from each other, a ſmall but irregular Diſtance; others lay them in a confuſed Heap, faſtened together like a Lump of Sand; ſome range them in regular Order like a curious Pavement of round Pebbles, theſe are on a plain or flat Surface: But ſome others lay them round a Stalk or Blade of Graſs; ſome cover them with a woolly or downy Subſtance, which keeps them from the Cold, and hides them from the Sight of Birds; others drop them, as they fly, looſe on the Ground in a promiſcuous Manner, of theſe moſt of their Caterpillars feed on the Graſs.

On the Caterpillar, and its Change to the Chryſalis.

IN their Progreſs from the Egg to the Chryſalis, they ſhift or throw off ſeveral Skins generally one every ſeven Days; but I am not certain whether they all ſhift the ſame Number of Skins alike: Thoſe which I have noticed have caſt their Skins five Times, and 'tis ſuppoſed they all do the ſame; however, they are about ſeven Weeks in their Caterpillar State; at the Expiration of which Time they are full fed, and prepare for a future State, by making themſelves a ſecure Retreat, wherein they lie two or three Days, during which Time they ſhrink and grow ſhorter, loſing the Uſe of their Feet entirely, and appear as if in great Agony; at Length the Skin on the two firſt Joints behind the Head, which at this Time appear very much ſwell'd, burſts, or rather ſplits, and opens ſome Way down the Back, and croſs the Head, that in ſome you would at firſt Sight ſuppoſe the Head of itſelf was divided. During this Time the Caterpillar ſtrives to throw off its Skin, which however he facilitates by a Motion very peculiar, working off the Skin Joint by Joint, till it arrives quite to the Tail; nor does it ceaſe twiſting and turning itſelf till quite diſengaged from it: It is now very ſoft and tender, and it is generally a Day before the Shell of the Chryſalis becomes hard, during which Time of hardening it very frequently turns itſelf, that the Side on which it lies may not be flatulated or deformed, yet when the Shell becomes hard, it lies Motionleſs, unleſs diſturbed by ſome Accident, till the Expiration of a certain Time, and at length breaks forth in the winged State; but during the Time of its being in the chryſalis State, it receiveth no Nouriſhment of any Kind, altho' ſome remain in that State near two Years.

From the Chryſalis to the Fly.

WHEN the Fly is perfectly form'd within the Chryſalis, or more properly, when each Part has arrived to its proper Shape, Strength, and Texture, the Chryſalis then appears much darker; and if a Butterfly, the Markings of the Wings plainly are ſeen through the tranſparent

tranſparent Chryſalis; at this Time the Hull, or Shell of the Chryſalis, is ſeparated from the Fly, whoſe every Part begins to grow dryer, whereby it is the better enabled to ſeparate them; thus being as it were unbound, and capable of moving, it makes a ſtrong Effort at once with that Part which I ſhall call its Shoulders, and puſhing at the ſame Time with its Legs forward, it ſplits the Head-part of the Shell in three Diviſions, one in the Front, which covers its Legs and Face, the other two one on each Side, covering the Wings; it then bends itſelf forward, and the front Diviſion or Maſk yielding, it lays hold on the lower or jointed Part of the Shell, and draws itſelf intirely out; being diſengaged from the Chryſalis, its next Buſineſs is where it can hang by its Legs, with its Wings downward, and where they may ſtretch and grow without Obſtruction. For the Wings of the largeſt Flies, when they firſt come out of the Chryſalis, are not much bigger than a ſilver Penny. It ſeems very careful in the Management of its Wings while they are growing, often ſhakeing its Body, leaſt by their Dampneſs they ſhould ſtick together; then by a gentle rocking of its Body, to try if it can feel with its Wings any thing that may obſtruct their growing; and if ſo, will directly creep higher or move at a greater Diſtance. As the Wings grow they rumple and pucker in rude Faſhion, and after a ſhort Time, they nicely expand themſelves, hanging very flat, and exactly even with each other: They now appear of the Conſiſtence of Paper which is rotten damp; but they are much leſs Time in drying than in growing to the full Size. When he thinks his Wings are ready, he ſuddenly opens them a little Way, and if he finds them too heavy, or that they yield, bend, or give Way in ſtriking the Air, he very cautiouſly cloſes them again; at length he begins to open and ſhut them ſoftly, as it were fanning them lightly, till they be quite dry, then ſuddenly ſtarts into the Air, and flies away.

A Butterfly is fit for Flight in leſs than half an Hour after it comes from the Chryſalis, and thoſe of the greateſt Moths hardly exceed an Hour.

The Food of both Moths and Butterflies are much alike, being chiefly the Honey which they extract with their long Proboſes, out of Flowers, or the Honey-dew which is found on the Leaves of Trees, Plants, *&c.* Indeed it may be excepted, that ſome Moths do not feed, nor take any Suſtenance whatever, the Hens in particular, nor have ſome any viſible Organs for ſuch Purpoſe.

How many different Species of Moths and Butterflies we have now in England, is certainly impoſſible, even to form a Judgment of: However, of thoſe already known, our Catalogue amounts to between four and five Hundred, of Flies we have about Fifty; neither is there much Expectation of there ever being any more diſcover'd: But of Moths ſomething new may be found almoſt every Day, if ſought after with Diligence.

The Diſtinguiſhing Difference, between a Moth and a Butterfly, conſidered in their Caterpillar Chryſalis, and Winged State.

FIRST then, to begin with the winged State. The Horns or Antenna of a Butterfly, hath a Knob, or Ball at the Extremity or End of each, and are for the moſt Part pretty ſtraight. The Antenna of Moths, chiefly diminiſh gradually, and end in a ſharp Point; tho' indeed ſome do ſwell about the Middle, or towards the Point, or End, ſome are Comb-like and very broad, others appear like fine Thread; and moſt of them have a winding Motion from the Root to the Extremity; others are notched on the under or inner Side, like the Teeth of a Saw.

The Tails or Abdomen of Butterflies, commonly lays in a Kind of Grove or Bed, which is form'd by the Underwings; neither do the Tails ever reach below the Edge of the Underwing. The Tails of Moths in general, lie beneath the Underwings, and reach to the Extremity of the Underwings, and many of them a great Way beyond.

A Butterfly always ſleeps or reſts with its Wings erect over its back; the Underwings being Broad, and without Folds. The Moth commonly reſts with its Wings covering its Tail and Underwings; on which Account, Providence has ordered it ſo, that the Underwings of all Moths, fold themſelves up half Way in the Manner of a Fan.

A Butterfly

PREFACE.

A Butterfly always flies in the Day, and moſtly in the Morning, but never in the Night. Moths, ſome flie in the Day-time, ſome after Sun ſett in the Evening, and others in the Dead of the Night.

Tho' I muſt here obſerve, that tho' theſe are Rules very ſufficient whereby you may know a Moth from a Butterfly, yet I well know there is not one of the above Rules, but has an Objection; and altho' Moths and Butterflies are two quite different Species of Inſects, and at the very firſt Sight each of them confeſs themſelves to a good AURELIAN; Yet I wholly believe 'tis impoſſible, by any propoſed, particularity, to make a Rule to know one by, which ſome one of the other will not be an Objection to. The ſame Difficulties ariſe in attempting to claſs either the Moths, or the Butterflies; and altho' ſeveral has attempted to do it, yet the many Obſtacles they meet with in their Way, eſpecially among the Moths, many of which will jar, with the Order and Regularity of their Work, that the Matter is rendered extreamly Difficult; theſe however, they ſqueeze into ſome Place or other; for you know they muſt be put ſome-where; ſo at laſt the Work is rendered Imperfect; but to return to the Matter in Hand.

I ſhall further obſerve, that when a Moth in any Part of its Inveſture ſeem to cloſe with a Butterfly, *viz.* either in the Horns, Shape of the Wings, *&c.* it ſhall differ in every other Particular, and that ſo notoriouſly, that you may always be able to know which of the two it is. Thus the great Magpie in the Form of its Wings much reſembles a Butterfly; but its Horns or Antenna, are like crooked Threads; the Head remarkably ſmall, its Abdomen reaches to the bottom Edge of the Underwings, which have ſeveral folds in them; and as all this Claſs of Moths do moſt reſemble a Butterfly at firſt Sight, ſo the Caterpillar from whence they proceed, has the leaſt Reſemblance to thoſe of the Butterfly Kind; for as I have often obſerv'd, thoſe broad-wing'd Moths, moſtly proceed from Loopers, which have the ſmalleſt Number of Legs, while thoſe of the Butterfly Kind have the moſt; and indeed, not to be too prolix, I know not any other Matter, either Texture of Wings, Manner of Flight, Food, or any Thing elſe in which it any Way reſembles the Butterfly Kind. This brings to my Mind, Mr. *Wilks*'s new Claſs of Moths, *Book* II. *Chap.* I. where I think he ſays, Flies reſembling partly Moths, and partly Butterflies; here he produces but one ſingle Inſtance, which to me is no Inſtance at all of any ſuch ſtrange Being; nor would I have taken the Liberty to have mention'd it in this Work, had I not been fearful young AURELIANS might have been led aſtray, by the Novelty of the Thought, and perhaps in Proceſs of Time, have added a great Number of other Moths and Butterflies into a Species of Inſects, never before heard off, at leaſt in this Part of the World. The Fly he ſpeaks off, is the Burnett, the Horns or Antenna of which ſwell, and that pretty much towards the Point or Extremity: But this is not at all like the Ball or Knob at the End of the Butterflies Antenna; in its ſetting Poſition, its Wings are remarkably cloſed about its Body, which appears much below the Underwings; but indeed this Inſect in every Circumſtance leaſt reſembles a Butterfly, than any Genus of the Moth Kind that I know, either in the Form or in the Colour, which in this Moth is ſo very remarkable, that none of our Butterflies has the like; I mean that fine ſhining Metallick Green, which covers the Body and upper Wings of this Moth; and where Greens are introduced in the Butterfly Kind, I mean only theſe of this Iſland, you will always find it on the under Side, and not a Green of this ſhining Quality; but to re-aſſume my former Diſcourſe.

Their Caterpillars likewiſe differ in the following Particulars.

THOSE of the Butterfly Kind have all in general, that are yet known, ſixteen Legs, and thoſe placed in the Manner following: Suppoſing that Caterpillars of all Kinds have twelve Joints, Rings, or Diviſions, where the Caterpillar's Legs are placed is marked by Dots, counting from the Head to the Tail. The Firſt toward the Head are in the Form of Hooks, or Claws; the Eight which are in the Middle, may with more Propriety be called Legs.

1	2	3	4	5	6	7	8	9	10	11	12
o	o	o			o	o	o	o			o
o	o	o			o	o	o	o			o
o	o	o			o	o	o	o			o
o	o	o			o	o	o	o			o

Being

Being form'd with the ſame fleſhy Subſtance with the Body, and is moſt employed when the Animal is in Motion; the two laſt behind may be call'd Holders, becauſe with them they do hold or adhere very ſtrongly to the Leaves and Branches, nor do they ever looſe them when creeping, till all the reſt of the Feet are fixed.

The Caterpillars of the Moth Kind differ greatly with regard to the Number of Legs, which I ſhall divide into five different Claſſes, *viz.* Loopers, Half Loopers, Quarter Loopers, thoſe having no Holders behind; and the common Sort, which have the ſame Number with thoſe of the Butterflies; the Legs of the Loopers are placed thus:

1	2	3	4	5	6	7	8	9	10	11	12
o	o	o						o			o
o	o	o						o			o

The above move forward by ſtretching or extending themſelves at full Length, holding faſt at the ſame Time with their hind Holders, and the next you ſee placed at (9); they then fix faſt their ſix Claws at the Head, and looſing their Holders, draw their Tail-part quite cloſe to their Fore-part, ſo that at every Step or Stride they form a Loop, and are for that Reaſon called Loopers. The Legs of the Second are placed thus, and are called Half Loopers; becauſe in walking or creeping, they bend their Bodies in the Form of a half Loop; or to ſpeak more intelligible, the Legs of the Hinder never are drawn up cloſe to the Legs of the Head-part, which the Loopers always do.

1	2	3	4	5	6	7	8	9	10	11	12
o	o	o					o	o			o
o	o	o					o	o			o

The Third hath fourteen Legs, which are placed as beneath, and are for Diſtinction Sake called Quarter Loopers, and with the ſame Propriety as the Laſt are called Half Loopers; for they bend their Bodies in the Form of Part of a Loop, tho' not ſo much as the Half Loopers do. The Legs of this Sort are thus placed:

1	2	3	4	5	6	7	8	9	10	11	12
o	o	o				o	o	o			o
o	o	o				o	o	o			o

The Fourth hath likewiſe fourteen Legs, tho' placed in a different Manner, they having no hind Holders.

1	2	3	4	5	6	7	8	9	10	11	12
o	o	o			o	o	o	o			
o	o	o			o	o	o	o			

The Legs of the Fifth are the ſame with the Butterflies, both in Situation and in Number, which is Sixteen, nor has any Caterpillar more.

The Caterpillars producing Butterflies do not ſeem very inclinable to be hairy, ſome being quite naked, others cover'd with a ſhort woolly Down, ſomething like that upon the Peach, the reſt are beſet with branched Spikes, which thoſe of the Moth Kind never are; thoſe Caterpillars of the Fly Kind, which may be ſaid to be hairy, the Hair is very fine and tender; of thoſe of the Moths, ſome are thickly cover'd with long Hairs, others have very few but thoſe long; ſome have Tuſks or Tuſſocks of Hair on their Back, the reſt are quite naked.

The Caterpillars of the Butterfly Kind, when ripe for their Transformation, ſome hang up by the Tail, with their Head perpendicularly downward, which are thoſe of the thorny or ſpiked Kind; and one other Claſs of which we have but one Specimen, *viz.* the Purple Emperor, with this Difference between the two, that the one always chooſing the under Part of an horizontal Plane, ſuch as the Cieling of a Room to hang from, the other from a Perpendicular, ſuch as a Wall, *&c.* the others fix themſelves by the Tail with their Heads Perpendicular upward, a ſilken String going round the Middle to ſupport them. It may be obſerved, that ſhould the Caterpillars of the branched Kind faſten themſelves, to change with a Thread round the Middle like the ſmooth Claſs, they could never get their Skin off them, being interrupted by the Silk Thread; therefore Nature, to avoid that Inconvenience,

directs them to hang themſelves Perpendicular by the Tail, that they may be free from every Thing which might obſtruct them in their Time of Transformation.

But perhaps nothing in Nature more deſerves our Conſideration and Inſpection, than the various Methods thoſe of the Moth Kind take to hide and ſecure themſelves from Danger, while in that helpleſs and inactive State; ſome bury and change in the Earth about one Finger deep, within a tender Web; others form a ſtrong Caſe in the Earth, wherein they change to their Chryſalis; ſome ſpin a Caſe of Silk very ſtrong, moſt of which are nearly in the Form of an Egg; of this Sort there be great Variety, differing in Form, Texture, and Colour, ſome are long, and ſmall at each End, others are flat at the Ends, ſome very ſoft, others ſo hard as not eaſily cut with a Knife, ſome change in Caſes within the Bodies of Trees, others folded and ſpun up in Weeds, float about in Ponds on the Surface of the Water, ſome in Stalks of Plants without any Spinning, except that which covers the Hole, which they make for their Paſſage out; ſome ſpin up in a fine tranſparent Web like Gauſe, others again are compoſed of ſo few Threads as ſcarcely to contain the Chryſalis; the Caterpillar of the hairy Sort generally mix their Hair with their Webs.

The Chryſalidis of the Butterfly Kind, many of them appear all over beautifully gilt with burniſh'd Gold, others variouſly ſpotted with Gold and Silver; ſome White ſpotted with Black, others Green ſtriped and ſpotted with Brown; moſt of theſe differing both in Form and Colour.

Thoſe of the Moth Kind, eſpecially of the larger Sort, are of a dirty Brown, and not greatly differing in Form, thoſe indeed of the ſmaller Kind vary in Form and Colour; but there are none that may be reckoned extraordinary either for Beauty of Colour or Shape, nor has one of them the leaſt Appearance of Mettle on them, as thoſe of the Butterfly Kind, that being peculiar to them alone, and of them to one particular Claſs, which are thoſe of the ſpiked or branched Kind.

The Eggs both of Moths and Butterflies vary ſo much, that I could not, without many Exceptions, make any Diſtinction between one and the other.

I ſhall therefore conclude this Part of the Introduction with obſerving, that Butterflies never paſs thro' the Winter in the Egg State; and on the other Hand, Moths very rarely paſs that Seaſon in their Fly State; an Obſervation that I believe hitherto has eſcaped general Notice.

There are ſeveral Sorts of Nets made Uſe of to catch Inſects, to wit, the Batfolder, the Racket, and the Scithers Net: The Batfolder is made of Muſketta Gauſe, and is form'd like the Batfolding Net made Uſe of to catch Birds; theſe may be had at the Fiſhing-Tackle Shops, by aſking for them; they call them Butterfly Traps.

The Method of uſing the Batfolding Net is thus: On ſeeing the Inſect come flying toward you, you muſt endeavour to meet it, or lay yourſelf in its Way, ſo that it may come rather to the right Side of you, as if you intended to let it paſs; then having the Net in your Hands, incline it down to your right Side, turning yourſelf a little about to the Right, ready for the Stroke; not unlike the Attitude in which a Batman in the Game at Cricket ſtands, when he is ready to ſtrike the Ball, only his Bat is lifted up, but your Nets muſt incline rather downward: When the Fly is within your Reach, ſtrike at it forcibly, receiving the Fly in the Middle of your Net, as it were between the two Sockets of the Benders, that being the Part of the Net which beſt receives the Inſect; and not only ſo, but ſhould the Fly ſtrike againſt the Belly or wider Part of the Net, the Courſe of Air cauſed by the Motion of the Nets, would carry the Fly with it out of the Net between your Hands, which I have often experienced. The Motion of your Hands in catching, muſt be from your right Hip to your left Shoulder, not at all retarding the Motion, 'till 'tis as it were ſpent, cloſing the Nets in the Motion.

You are likewiſe to remember never to give the Stroke over-handed, unleſs the Situation of the Place oblige you to it. Having cloſed the Net with the Inſect in it, immediately graſp both the Sticks in your left Hand, and with your Right lay hold of the bottom Part of your Net, pulling the Gauſe pretty tight, giving that alſo to the Gripe of the left Hand, this confines your Fly from ſtruggling. Put then your Hand againſt the Fly on one Side, and bringing the Top of your Fore-finger on his Body, and with your Thumb on the other, ſqueeze him gently, then lay your Nets on the Ground, and take out

out your Fly by a Horn or a Leg, and holding him in an advantageous Manner by the Body in your left Hand, run a Pin thro' the thick Part of the Body, or Cheſt, perpendicularly, and put it in your Box.

When you purſue a Fly you muſt catch him when in your Reach, in the ſame Manner, except its Courſe is along a Ditch, on the Left-hand Side of you, and then you will not be able to touch it, the Poſition being very aukward; in this Caſe you muſt overtake it, and turning nimbly about, the Poſition will then be as in the firſt Caſe; the Fly then coming to the right Side of you. I having given you ſufficient Inſtructions for the Uſe of the Batfolder, I ſhall next proceed to the Racket Nets,

Which are form'd of Wire about the Size of a Raven's Quill, turned round to a Circle, bending the Ends outwards by way Shanks, which are made faſt in a Braſs Socket; this Circle or Ring of Wire is covered with Gauſe, and bound round with Ferret; a round Stick of about two Feet in Length is fitted to this Socket, by Way of Handle. Theſe Sort of Nets are what an AURELIAN ſhould at all Times carry about him; a Pair of theſe of about ſix Inches Diameter are the moſt convenient for that Purpoſe. The chief Uſe of theſe Sort of Netts are for catching Moths, ſitting againſt a Tree, Wall, or Pales; or a Moth or Fly ſitting on a Leaf, may be conveniently caught between a Pair of theſe.

The Scithers Net are no more than a ſmall Pair of theſe Racket Nets, fixed on two Pieces of Iron which are rivetted acroſs each other, with two of the Ends turn'd round in the Form of Rings, for the Admittance of the Thumb and Finger; in ſhort, a Pair of Toupee Irons, or Curling Tongs, ſuch as is uſed by a Hair-Dreſſer, are very well adapted for this Purpoſe, with a round Net fixed to the End of each Tang with binding Wire, or ſmall Twine well waxed; theſe Nets are principally adapted to take ſmall Moths, *&c.*

I ſhall in the next and laſt Place proceed to inform the young AURELIANS, what Apparatus is neceſſary, when he goes out to the Field in purſuit of Inſects, and the Method by which they are extended, or ſet, and preſerved, when brought home, and that he may not be inconveniently loaded with more Things than is neceſſary; he ſhould conſider his principal Purſuit, before he ſets out, if his Intention is to ſpend a Summer's Morning in ſome delightful Woods, where he may expect to find plenty of Flies, he need take no other Net with him, than the Bat-folding Net, one of the Sticks of which may be uſed as a Walking-ſtick, and the other, may be made to take in Half, or put to gather at Pleaſure, by a Braſs Socket in the Middle, and carried convenient with the Benders in a Canvas Bag under the Coat; it will be proper to take two large Chip, or Dutch Boxes, cut down pretty flat, and lin'd within-ſide, Top and Bottom with Cork of about a Quarter of an Inch or ſomewhat leſs in Thickneſs, which ſhould be paſted over with White Paper, beſides thoſe, he ſhould be provided with another ſmaller Box for Caterpillars, in Caſe ſuch ſhould fall in his Way; in the Lid of which ſhould be cut a Hole, as large as will about admit your Thumb to go in eaſily; this muſt be ſtopt with a Cork cloſe fitted, ſo that ſmall Caterpillars may not get out; together with theſe, he muſt take with him a Pincuſhion well ſupply'd with Pins of different Sizes, for the different Sizes of Inſects, which may be taken, and to be ca reful not to ſtick a ſmall Fly or Moth, with two large a Pin, which will certainly deſtroy it, by putting the Joints of the Wings out of place, for ſuch Inſects as are disjointed, will never ſet well, and fall to pieces in a ſhort Time. And whereas ſome of the ſmaller Flies or Moths, by being indued with ſo ſmall a Quantity of Humidity, are very apt to dry in the Box, ſoon after being ſtuck with a Pin. The AURELIAN ſhould take with him, a Quantity of ſuch Card Braces, as are deſcribed on the Setting-Board in the Twentieth Plate, and expand or ſet their Wings before he goes out of the Field, or rather as ſoon as he perceives them to be dead, otherways 'tis impoſſible to do it afterwards.

It may not be improper to mention ſome other Conveniences, which I have often found very neceſſary, ſuch as a pretty large Claſp Knife, and ſome Needles and Thread. The Firſt he will find uſeful on many Occaſions, and the Second is neceſſary in mending the Nets, in caſe he ſhould happen to tare them, and to repair other Diſaſters, which are incident to People who frequent Places where ſuch ſharp Things as Thorns and Briars grow.

Having

PREFACE.

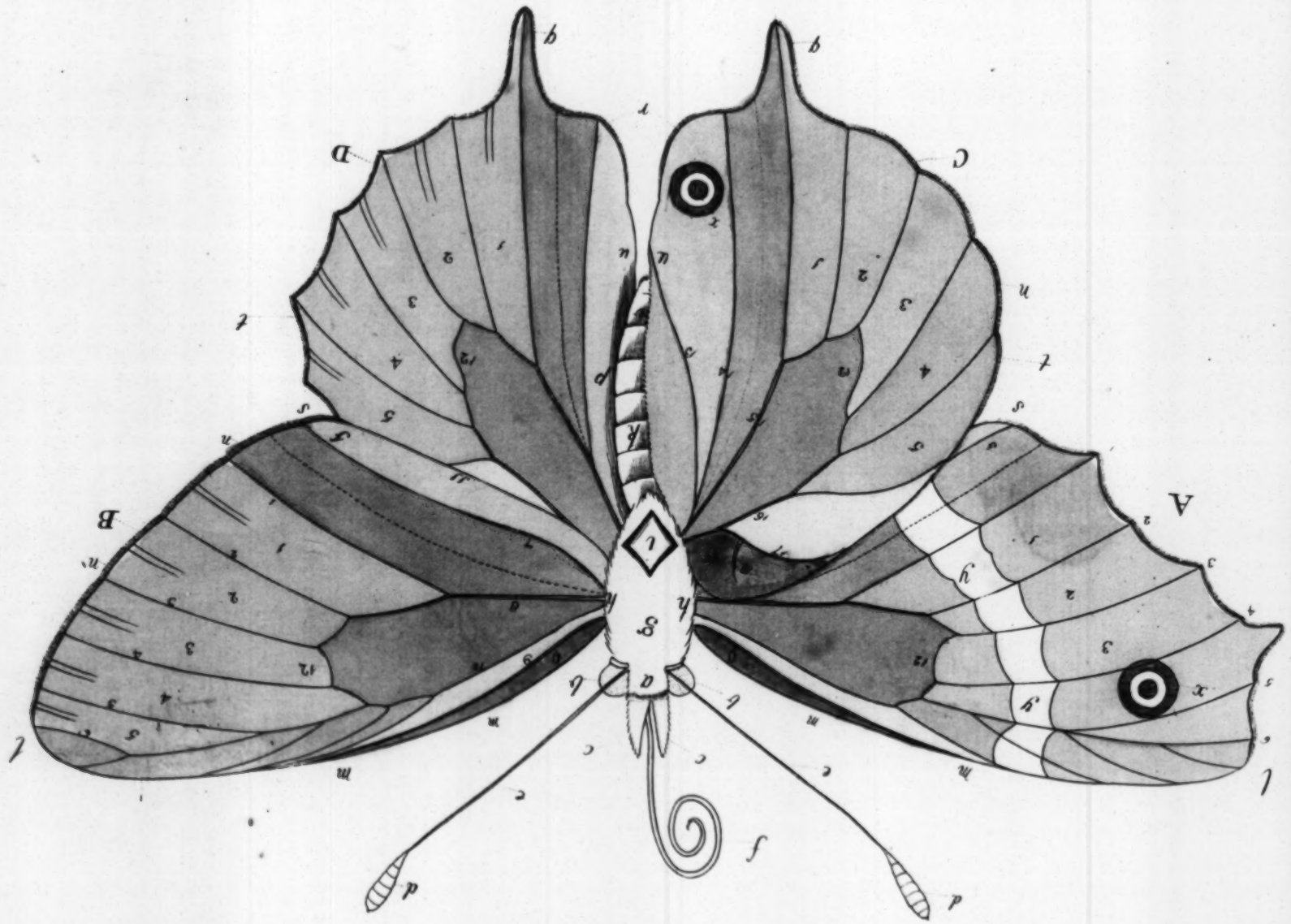
Having return'd Home with your Inſects, look in your Boxes, and obſerve which of them is fit to ſett, ſuch as is dead, but not ſtiff, are ſo; then proceed to manage with them as follow: Take a Fly, and obſerving if the Pin be perpendicularly run thro' the Body, place it on the Setting-board, then take your Point and gently raiſe one of the upper Wings, 'till ſuch time as the Tip be even with the Noſe of the Fly; this done, fix one of your Card Braces on that Wing, to prevent its giving Way; do the ſame by the Wings on the other Side, and your Fly will be properly extended: Let the Brace remain on the Wings of Butterflies a Fortnight, on thoſe of large Moths a Month.

The Setting-boards of which it is proper to have three or four, ſhould be venear'd over with Cork, near a quarter of an Inch in Thickneſs, and cover'd over with white Paper, ſmoothly fixed on with Gum Arabick. The Point which is made uſe of to ſett the Flies, is nothing more than a common large Needle, fixed in a kind of Handle.

Altho' many and various hath been the Methods tried to preſerve the Flies in Cabinets, from ſmall Inſects which deſtroy them, by eating away their Bodies, yet all Attempts have been hitherto fruitleſs; I therefore think it neceſſary in this Place, to mention a Method which I think will effectually do the Buſineſs.

Take the Drawer before it be lined with Cork, and ſet it ſome Diſtance from the Fire, ſo as to obtain a little Warmth, then with a ſmall Quantity of *Unguentum Serulium*, or Ointment of Ruſſet, on a Woollen Rag, rub it all over, inſide and out, pretty ſtrongly; then do the ſame by the under Side, and the Cork which you propoſe to line it with, and in covering the Inſide of your Drawer with White Paper; on no Account make Uſe of Paſte, as ſome Sorts of thoſe Inſects which deſtroy them Flies are very fond of it; but ſtrong Gum Arabick inſtead.

The Ointment may be had at the Apothecaries, and one Ounce is ſufficient for twenty Drawers.


A
B
C
D

A Table of the Terms uſed in the Deſcriptions for the various Parts of the PAPILIO, *which refers to the enſuing Plates, wherein they are delineated at large.*

a HEAD.
b Eyes.
c Palpi.
d Knobs of the Antennae.
e Threads of the Antennae.
f Tongue.
g Thorax.
h Shoulders.
i Scutulum or Eſcutcheon.
k Abdomen with its Anuli.
l Tips or Apices.
m Sector Edge.
n Fringes.
o Sector.
p Abdominal Groove.
q Tails.
r Abdominal Corners.
ſ Lower Corners of the ſuperior Wings.
t Outer Corners of the inferior ditto.
u Abdominal Edges.
w Anus.
x Ocelli.
y Bar, Band or Garter.

A Superior Wing angulated.
B Superior Wing, ſmooth or even edged.
C Inferior Wing ſcallaped.
D Inferior Wing indenticulated.

The Interior Parts of the Superior Wing deſcribed.

The Parts coloured *Green*, are the FAN-TENDONS, and MEMBRANES, marked in Numerical Order; viz. 1ſt, 2d, 3d, &c.

PAPILIONES have only five of theſe MEMBRANES, and ſix TENDONS.

The Parts coloured with *Pale Crimſon*, are the TABLES.

The *Pale Blue*, ſhews the SECTORS.

Shoulder MEMBRANE—*Yellow*,

Slip MEMBRANE—Pale Orange.

Long MEMBRANE—Pale Indian Ink.

The Parts coloured Purple, are the SECTOR TENDONS and MEMBRANES, and it is in this Part of the Wing only, wherein one GENUS differs from another.

The Grand Tendons are coloured deep Red, and are three in Number; viz.

7 Long Tendon,
8 Principal Tendon,
9 Shoulder Tendon.
} Grand Tendons.

10 Table Tendon,
11 Slip Edge.
12 Bar Tendon.

Interior Parts of the Inferior Wing deſcribed.

Green, ſhews the FAN-TENDONS and MEMBRANES, which are the ſame in Number as in the Superior Wings.

Pale Crimſon, ſhews the TABLE MEMBRANE.

Blue. The Sector.

Yellow. TABLE MEMBRANE or BENT, ditto.

Pale Indian Ink. LONG MEMBRANE.

Pale Orange. ACCUTE MEMBRANE.

Deep Red. GRAND TENDONS, three in Number; viz.

15 POSTERIOR TENDON,
16 TABLE TENDON,
17 BENT or FEMORAL TENDON,
} Grand Tendons.

18 Spur; this Part anſwers to that little Inſtrument in the Phalœna, called Spring.

13 Abdominal Tendon.

14 Long Tendon.

It is worthy to be remarked, that although the ſeveral Parts of the Inferior Wings greatly correſpond with the reſpective Parts of the Superior, yet here are no Parts anſwerable to the Sector Tendons and Membranes, and which are diſtinguiſhed with Purple in the Superior; but Providence ſeems to have ſupplied that Deficiency, if I may call it one, by adding another on the oppoſite Edge of the Wing, called THE ABDOMINAL MEMBRANE, and is coloured Purple.

PL. I

THE

AURELIAN, &c.

PLATE I.

The COMMA.

The HOP. LUPULUS, mas & fœmina, C. B.

THE *Caterpillar (a)* of the *Comma Butterfly*, which generally feeds on the Leaves of the Hop, but is ſometimes found on the Nettle, is very ſlow of Motion, and may be taken from the latter End of *July* to the Middle of *Auguſt*, about which Time it ſuſpends itſelf by its Tail to the Branches, or under Part of the Leaves of the Hop by a Web, which, though very fine, is ſo ſtrong, that unleſs great Care be taken in ſeparating them, you will pull the *Caterpillar* aſunder; it hangs in this Manner about twenty-four Hours, then changes to the *Chryſalis*, as at *(b)* in which State it remains about fourteen Days, and then produces the *Butterfly*, called *Comma*, from a white Mark on the under Side of the under Wing, reſembling that Stop in Printing. *(c)* Is the Female, flying to ſhew the upper Side of her Wings; ſhe is larger, her Colour paler, and her Wings not ſo much indented as thoſe of the Male, which is repreſented ſettled on the Leaf of the Hop at *(d)*, to ſhew the under Side of her Wings. This Fly hides itſelf during all the cold Seaſon, and appears again in the Month of *April*, much faded in its Colour, when it lays its Eggs on the young Sprouts of the Hop and Nettle, which are hatched about the Middle of *May*, go through the ſame Changes as above, and produce a Fly by the latter End of *June*, which lays the Egg that produces the firſt-mentioned Caterpillar.

N. B. The *Comma* is very ſwift in Flight, and timorous when ſettled, that it is difficult to get near enough to lay the Net over it; they fly in Lanes, by Bank Sides, often ſettling in dry clayey Places, and againſt the Bodies of Trees.

The BURNET MOTH.

Common Meadow Grass.

Gramen pratenſe minus vulgatiſſimum. Dr. Hill.

THE *Caterpillar (e)* feeds on *Hay Graſs*, where it may be found during all the Month of *May*, and ſometimes in *June*; but thoſe which are found ſo late, are generally ſtung by the *Ichneumon*. It goes into *Chryſalis* from the Middle of *May* to the Beginning of *June*; in which State it is incloſed in a yellow Silken Bag or Web, faſtened to the Sides of the Stalks of the Graſs, as repreſented at *(f)*; where it remains about fourteen Days, then produces the Moths *(g)* and *(h)*; the Hen is largeſt, and her Colour more tending to Yellow than the Cock *(h)*, which flies about in Search of her, while ſhe ſits waiting for him in the Leaves of the Graſs: They may be eaſily taken with your Hand when ſettled; and when taken, will lie for ſome Time as if dead, though unhurt.

N. B. They remain in the *Caterpillar* State during all the Winter, and in *June* the *Caterpillar*, *Chryſalis*, and *Moth*, may be all found at the ſame Time. *(i)* Is the *Chryſalis* of the *Burnet Moth* taken out of its Web. An *Ichneumon* Fly often lays its Eggs in the Body of the *Burnet Caterpillar*, which are there hatch'd, and produce ſmall white Maggots, which feed on its Fleſh. The *Caterpillar*, notwithſtanding it is infeſted with ſo many of theſe Devourers, that they ſwell his Body much beyond its natural Bulk, ſometimes lives till the Time they generally begin to ſpin their Web, in which they incloſe themſelves when about to go into *Chryſalis*, but is deſtroy'd by theſe Inſectophagi before he can complete it. When theſe Maggots, are near full fed, they eat their Way out through the Skin of the *Caterpillar*, as at *(m)*, and leave it ſhrunk and dying, as repreſented at *(k)*. In a ſhort Time after they go into *Chryſalis (n)*, and in about ten Days more produce Flies like their Parent *(l)*.

The PLUMED MOTH.

THE *Caterpillar*, which is ſo ſmall, that it is difficult to be found, feeds on Graſs by the Sides of Ditches. They are eaſieſt to be taken in the Beginning of *June*, when they are going into *Chryſalis*, as at *(o)*; in which State they remain about fourteen Days, then produce the *Moths (q) (r)*, which ſettle on the Leaves of the Nettle, chiefly in Flocks.

The

PL. II

To the Right Hon.ble EARL BROOKE &c.
This Plate is Humbly Inscribed by
His Lordship's most Obedient & Devoted Servant
Moses Harris.

The PRIVET HAWK.

Privet. Liguſtrum vulgare. Dr. HILL.

THE *Caterpillars* of the *Privet Hawk*, when firſt hatched, have the Horn at their tails very long, in Proportion to their Bodies, as repreſented at (*a*). In their ſecond Skins their Shape and Colour is much the ſame as in their third, in which they are ſhewn at (*b*), in a poſture they are frequently found in, when not feeding or ſeeking their Food: In this Skin they are beautifully froſted with yellow Spots, which diſappear in the fourth; but ample Amends is made for this Loſs, by the purple Edging of the under Part of the white Streak, which go obliquely acroſs its ſides; and the Feet likewiſe are adorned with two Lines of fine Purple; with this Skin the Roughneſs goes entirely off, and it appears in its ſixth or laſt quite ſmooth, as repreſented at (*c*); their common Food is the *Privet*, though they are ſometimes found on the *Lilack*; their Colour being ſo near that of their Food they are not eaſily found, but if you look carefully on the Ground, under the *Privet* or *Lilack*, if there are any *Caterpillars* on the Tree, you will find their Dung, which is of the Shape, Size and Colour as repreſented at (*d*); and by it you may be directed to the *Caterpillars* above.

This *Caterpillar* is ſo very tender, that if it falls from the Tree to the Ground, which they ſeldom do except in rainy Weather, it generally proves fatal to him. But the Great Creator, whoſe Prudence is manifeſt even in the ſmalleſt of his Works, has armed them ſufficiently againſt Accidents of this Sort, by providing them with a Roughneſs at the Bottom of the middle Feet, and the two Holders at the Tail reſemble the Teeth of a File, with which they hold ſo faſt to the branches they are on, that if you endeavour to pull them off with your finger you will certainly deſtroy them; the beſt way to take them therefore is to cut off the Branch on which they are found with a Pair of Sciſſars, for a Blow againſt the Leaves or Branches is capable of deſtroying them. They are full fed as at (*d*) about the Beginning of *Auguſt*, at which Time their Backs are tinged with Brown; they then crawl down the Tree, and go into the Earth about a Finger deep, where they ſpin a thin weak Web, and in about five Days go into *Chryſalis* (*e*), which is remarkable, on Account of a Protuberance like a Noſe, which contains the Proboſcis of the *Moth*. In this State they lie till the latter end of *May*, or Beginning of *June*, in the Year following, when they produce the *Moths* (*f*) and (*g*). The Cock (*f*) is deeper coloured and ſmaller than the Hen (*g*), which ſeldom flies, but when ſhe is in Search of a Place to depoſit her Eggs, which ſhe does on the Branches of the *Privet* or *Lilack*.

It will be proper in this Place to give ſome Account of the Manner of rearing this *Caterpillar* from the Eggs, which are when firſt laid of a light Green, as repreſented at (*h*). When the *Caterpillar* is about to eat his Way out, the Colour of the Egg changes to a dead White; this generally happens in about a Week after they are laid, but the Time is uncertain, for ſome have lain three Weeks before they came out: as ſoon as they are hatched lay a Sprig of *Privet* gently over them, and they will get on it and feed; then put it into a Bottle of Water in a Cage, which muſt be large enough to hold two Bottles, that they may creep from one to the other when they want freſh Food, which they muſt be ſupplied with at leaſt every other Day; for the Juices of the *Privet*, when kept too long in Water, will be ſo much impoveriſhed or diluted, as to flux the *Caterpillars* and kill them. This Diſeaſe is ſometimes carried off by the Perſpiration being ſo much increaſed, as to ſtand in Drops about the Head, and by this Means they generally recover, and produce *Moths*; but many others, that ſuffer by this Neglect, will be apparently ſtrong over Night, and found dead next Morning.

This Diſeaſe is more fatal to the *Caterpillars* of the *Emperor*, *Eyed Hawk*, and *Poplar Hawk*, than the *Privet*; no other Caution but this is neceſſary in breeding them; only it will be proper, when they are near full fed, to lay a ſufficient Quantity of Mould in the Bottom of the Cage, for them to go into when about to change into the *Chryſalis* State.

They are ſeldom taken in the *Moth* State; but when they are, you muſt be careful how you handle them, for the middle Joints of their Legs are armed with ſharp Thorns, with which they will prick your Fingers in ſtruggling to get looſe.

The TORTOISE-SHELL FLY.

THE Eggs of this Fly are laid on the uppermoſt Part of the Stalks of Nettles in great Numbers in the Beginning of *May*: The *Caterpillars* when firſt hatched are of a light yellowiſh Green, and cover the upper Part of the Nettle with a Web, in which they herd all together. When they ſhift their firſt Skin, the whole Colony removes to a freſh Place, leaving their Skins hanging on the deſerted Web; indeed, their Averſion to the place where they ſhift their Skins is very remarkable, for although there is ſometimes Plenty of freſh Food near it, they always retire to a conſiderable Diſtance. In the third Skin (*i*) they make another Remove, ſtill herding altogether in a Web; and now being quite Black, and greatly encreaſed in Size, they cover the Tops of the Nettles in ſuch a Manner, as to make them appear enveloped in a Piece of black Cloth for ſix or ſeven Inches downwards; in this Skin they are often miſtaken for the *Caterpillar* of the *Peacock*.

In the fourth Skin, being too big to live together in ſuch Numbers without being troubleſome to each other, they ſeparate into Companies of ſix or ſeven together, and getting on the under Side the Leaf, with their Web they draw its Edges almoſt cloſe together, making it hang down on the Stalk as if dead; and in this Manner they feed in their fourth and fifth Skins, and in their ſixth and laſt they ſeparate entirely, and ſtraying about, devour the Nettles in ſuch a manner, as to leave nothing but the Stalks and Fibres of the Leaves: in this Skin they are not ſo dark coloured, being more of a yellow caſt, as they are ſhewn in the Plate at *(k)*. About the Beginning of June they are full fed, and then ſome of them faſten their Tails, by a ſtrong white Web, to the Sides of the Stalks and under the Leaves of the Nettles, where they change to the Chryſalis; others go to the Covings of Walls, Eaves of Houſes, and Pales, near the Places where they fed, and hanging themſelves up by the Tails, go into Chryſalis. Now the firſt mentioned Chryſalides are of the Colour of burniſhed Gold, exceeding brilliant, as repreſented at *(l)*: The others are ſo different, that Perſons, not well acquainted with them, would ſcarce believe they were produced from the ſame Caterpillars, being of a dirty brown, ſometimes ſpotted with gold. The Cauſe of this extraordinary difference in their Colour is perhaps beyond the Reach of Human Underſtanding; but the reaſon that appears to me the moſt probable, is that thoſe Chryſalides, which are found in open Places are nearly of the ſame Colour of the Places they hang againſt, that they may not be eaſily found by Birds that would deſtroy them. In this State they remain about a Fortnight, and then produce the Butterflies *(m)* and *(n)*. The Female *(m)* is larger and her Colour more upon the bright orange than the Male, which is repreſented ſitting cloſe winged on the Privet, to ſhew the under Side of his Wings.

Theſe Butterflies, when they firſt come out of the Chryſalis, emit from their Tails a Liquor of the Colour of Blood, as the Peacock, and Admirable, alſo do, which being found on the Boards of Barns, and on Walls, probably give riſe to the Accounts we meet with in Hiſtories of its having rained Blood.

From this firſt Brood another proceeds, the Caterpillars of which may be found, of different Sizes, during all the Summer, producing Flies larger and finer coloured than the firſt Brood. They fly about Places where Nettles grow, ſettling on the Heads of the Teazle Furzes of the Dock, and Bloſſoms of the Thiſtle.

There is another Species of the TORTOISE-SHELL, ſmaller than theſe, the Caterpillars of which are nearly black in their laſt Skin; they are found at the ſame Time, and the Flies, though of the ſame Shape, are not near ſo beautiful as the above deſcribed.

PLATE

PLATE III.

The PURPLE EMPEROR.

Common Sallow.

ON the 26th of May, in the Year 1758, Mr. *Dru. Drury*, an ingenious Aurelian, in ſearching for Caterpillars, beat four off the Sallow, near Brentwood in Eſſex, which in their Shape and Motion differed from any hitherto diſcovered; being furniſhed with two Horns, of the ſame hard Subſtance as their Heads, reſembling the Telleſcopes of a Snail, and in their progreſſive Motion ſeeming rather to glide along like that Animal, than crawl as moſt Caterpillars do. Struck with the Oddity of their Appearance, and knowing I was about a Work of this kind, he was ſo obliging to give me one of them which I fed on Sallow, and found that, excepting the above Particularities, it greatly reſembled the Hawk Tribe, having a Point or Horn in its Tail, its Body being green, beautifully froſted with minute yellow Specks, having likewiſe ſeven diagonal Lines of a pale yellow on its Sides, and when at reſt, generally ſitting in the Poſture theſe Caterpillars do.

It is ſhewn in its different States of Motion and Reſt at *(aa)*. On the third of June it forſook its Food, and wandered about the Cage, as moſt Caterpillars do when about to change in ſearch of a Place where they may be leaſt liable to be moleſted while in the Chryſalis, by the reſt of their Brood, and where they be moſt ſecurely concealed from thoſe Animals that would deſtroy them; on the fourth it faſtened itſelf by its Tail to the Backſide of a Sallow Leaf, and on the ſixth at Night, changed into a Chryſalis of a beautiful pea green, with a Bloom of pearl Colour on it; and what is more remarkable, the diagonal Lines, which croſſed the Sides of the Caterpillar, are ſeen in this State, though the Colour is fainter, as may be ſeen at *(b)*. This being the Chryſalis of one of the fineſt Flies in this Part of the World, Providence ſeems to have taken peculiar Care for its Preſervation in this defenceleſs and tender State, by making its Colour ſo like the Leaf it hangs on, that it might eſcape the Search of a very nice Eye.

In examining that Part of the Chryſalis which contains the Wings of the Fly, I was confirmed in my Opinion of its being the Purple Emperor, by obſerving, that the ſquare Points of the under Wings projected beyond the rounded Extremity of the upper ones; this Conformation of the under Wing being peculiar to that Fly. On the twenty-ſecond at night, a few dark Spots were viſible on the Wings, and the next Day I found more on different Parts of the Body, which ſpread gradually, till the whole Fly appeared black through the tranſparent Chryſalis; and about eight in the Evening, to my unſpeakable Pleaſure, it produced the Male Purple Emperor.

Here, I hope I may be indulged in expreſſing my Thanks to my worthy Friend Mr. *Dru. Drury*, for the Diſcovery of the Caterpillar of one of the moſt beautiful Flies in the Univerſe, and which had hitherto eluded the Search of the moſt ſkilful and induſtrious Aurelians.

The

The Colour of this Fly is changeable, according to the different Lights it is viewed in. For in one it appears of a ſooty Black, and in another the Eye is ſuddenly dazzled with a reſplendent Glow of fine Purple; ſo that by frequently turning the Fly into different Poſitions, the Colours play and ſhift through all the Gradations, from a ſooty Black to a bright Purple, in ſuch a Manner as to entertain the Eye with a delightful and amazing Variety.

I have endeavoured to repreſent the Male flying at (*c*), to ſhew the upper ſide of his Wings: and although it is impoſſible for Painting to come up to the Beauty of the Original, yet I hope I have ſo far ſucceeded in my Attempt, as to give at leaſt as good an Idea of it, as any Figure hitherto publiſhed. The Female is painted ſettled on the *Sallow* at *(d)*, to ſhew the under Side, in which ſhe differs little from the Male; but on the upper Side of her Wings, ſhe falls very ſhort of him, being of a dirty Black, without the leaſt Tinct of Purple.

Mr. *Nixon* took a Female, which laid five Eggs the twenty-firſt of *July*, three of which produced *Caterpillars* the ſixth of *Auguſt*. This Gentleman endeavoured to raiſe them, and tried them with ſeveral Sorts of Growths; but the *Sallow* being omitted, they all periſhed. From this we may be certain, that they are in the *Caterpillar* State during the Winter.

It is a very difficult Matter to catch them during their Flight; for they generally hover like a Kite about very high Oak and Aſh Trees: and though, when they remove from one high Tree to another, they ſkim lower than at other Times, they do it with ſuch Rapidity, that the Eye can ſcarce follow them. They delight to ſettle on the Oak and Aſh, creeping from one Leaf to another to ſip the Dew, at which Time they may be eaſily caught.

For this Purpoſe, you muſt be provided with a Pole fifteen Feet long, with a Net at its upper End, the Mouth of which, when you have covered the Fly, is drawn together by a String, as a Purſe is. Theſe Flies are found in the greateſt Plenty at *Comb-Wood* near *Kingſton* upon *Thames*.

The Small GREEN HOUSE-WIFE.

THE *Caterpillars*, which produce this Moth, may be found by beating the white Thorn from the Middle of *May* to the Beginning of *June*, about which Time they are full fed, and appear as repreſented in the Plate, at *(e)* and *(f)*. The *Caterpillars* differ very much in Colour, ſome appearing of a darker, and ſome of a lighter Green, others of a rediſh Brown; but the green Sort are more frequently met with.

After ſpinning themſelves up in a ſlight Web, not unlike a net, they change into *Chryſalis*, as at *(g)*, in which State they lay about twenty Days, and produce the Moths (*h*) and (*i*), of which (*i*) is the Cock. They may be taken in the Moth's State, by beating the Hedges of white Thorn, which ſets them on the Wing, and, as they fly ſlowly, may be eaſily taken in a Net.

The Leaſt ERMINE.

THE Leaſt Ermine Moth generally begins to lay her Eggs in the Middle of *July* on the Branches of the white Thorn and black Thorn, in which State they continue during the Winter, and are hatched about the Middle of *April*; when the young *Caterpillars* incloſe themſelves in a Web, together with ſome Leaves of their Food. When they have devoured all that is within their Web, they make a freſh Spinning, ſtill incloſing their intended Food. In this Manner they feed till the Beginning of *June*; and now being grown much larger in Size, the whole Colony begins to expand or ſpread their Web in ſeveral Diviſions, deſtroying the Buſhes in ſuch a Manner, that ſometimes a whole Hedge of white Thorn will be ſtript of its Leaves. When they are full fed, as at (*k*), they retire in ſeparate Companies to the inmoſt Cells of their Spinnings, where they hang themſelves up by the Tail in Cluſters, and change into *Chryſalis*, as at (*l*). This generally happens about the Beginning of *June*. They remain in *Chryſalis* about fourteen Days, and then produce the Moths (*m*), (*m*). The Cock is repreſented flying, and is darker than the Hen. They fly by Day, and are very common.

PLATE IV.

The PINKUNDERWING.

Ragwort, *Jacobea Vulgaris*. J. B. H. 1057.

THE *Caterpillar* may be found feeding on the Ragwort near *Kentiſh-town* about the latter end of *July*; ſome of which are full fed, as at (*a*), and go into the Earth, where it is ſoft enough to admit them for the firſt ten Days of *Auguſt*. But the Nature of the *Caterpillar* is rather to hide itſelf, than burrow into the Earth, as in Holes or Cracks in the Earth, under Pieces of Dirt, dead Leaves, &c. where they ſpin, and change into *Chryſalis*, which is remarkable for its Smallneſs, in Proportion to the *Caterpillar*, which ſeems to promiſe one much larger.

This *Chryſalis*, which is repreſented at (*b*), is, by the Hardneſs or Thickneſs of its Shell, deprived of that Motion in the ſeveral Rings or Diviſions of its Tail, which is common to moſt other *Chryſalides*, and will appear if you do but breathe on them. This convinces me they have the Senſe of Feeling, even in this State, and that to a great Delicacy. The *Caterpillar* may be found in great Plenty the latter End of *Auguſt*; but thoſe which are ſeen ſo late are for the greater Part ſtung by the *Ichneumon*. Some hundreds of the *Caterpillars* were taken about this Time, all of which periſhed from that cauſe, nor did one eſcape thoſe Devourers: therefore, I adviſe thoſe who would breed this Moth, to get the *Caterpillars* as early as they can, and only thoſe which are in their

M.s Harris del. Virum

To his Grace Henry Augustus Fitzroy, Duke of Grafton, Earl of Euston &c.
This Plate is most humbly Dedicated
by his Graces most Obed.t & faithful Servant
Moses Harris.

their laſt Skin; for as the Plant will not keep freſh in Water, it will be very troubleſome to ſupply the ſmall ones, till they are fit for changing. If the Place where you find the Caterpillars be far from your Abode, you will no Doubt be careful to take home with you a great Quantity of the Food, and you may keep it freſh for eight or ten Days, if you follow my Method; which is to lay it under a Water-tub or Ciſtern, and it will imbibe Moiſture from the Dampneſs of the Place, ſo as to keep it perhaps beyond your Expectation. This Method may be uſed with any Tree, Shrub, Plant, &c.

When you ſupply the Caterpillars with freſh Food, which is to be put into the Cage without a Phial, leave a Quantity of the periſhed Plant in the Bottom of the Cage; for in that the Caterpillar will hide, and change into Chryſalis, which is ſhewn at (*b*), in which State they continue till the latter End of *May*, and then produce the Moths, (*c*), (*c*), (*c*).

They fly ſlow; and may be taken in Fields, Lanes, Gardens, &c.

The CREAM-SPOTTED TIGER.

THE Food of all the Tiger Tribe is for the moſt Part alike, they being what may be called general Feeders, and will feed on any Plant that is not too bitter or biting to the Taſte; tho' I obſerve that every Caterpillar has its beloved and favourite Food, and will eat no other, if that be near. So the Cream-ſpotted, tho' it will feed on Nettles, Cabbage, Lettice, Graſs, &c. yet that which appears moſt natural to them is Chickweed. The proper Time to ſeek the Caterpillar is about the Middle of *April*, on old Banks, which face the riſing Sun, at which Time and Places they may be found in their laſt Skin. When they are full fed as at (*d*), they creep into Holes or Cracks in the Banks, where they ſpin a weak Web as at (*f*), within which they change into Chryſalis, which is ſhewn at (*e*), as taken out of its Spinning. The Moth appears about the twenty-fourth of *May*, after lying in Chryſalis about twenty-eight Days. The Hen-Moth is repreſented flying, as at (*g*), (*g*): For after ſhe has been cocked, ſhe takes Wing, in ſeach of a convenient Place where ſhe may ſafely depoſit her Eggs, which ſhe lays on the fore-mentioned Places, and ſeldom is ſeen flying but on that Occaſion. The Caterpillars feed all the remaining Part of the Summer; and, at the Approach of Winter, hide themſelves in Holes of the Banks, and remain in a ſleeping State till *March*, when they come forth from their Retreats, and feed again.

The Caterpillar, when full fed, is about two Inches long, and thick in Proportion. It is very black, and covered with brown Hair; the Head and Legs are red as blood, and the breathing Holes on its Side are of a clear white.

The Moth may be taken flying in the Day-time in and about Woods

PLATE V.

The EYED HAWK.

Willow. *Salix.*

THE Caterpillars of this Moth were hatched from an Egg of the Shape, Colour, and Size repreſented at (*a*), which are generally laid on the Bark of the Willow or Ozier, ſticking thereto by a gummy or glutinous Subſtance, emitted with the Eggs from the Body of the Moth; which is of ſuch a Nature as not to be diſſolved by Water. She does not place her Eggs in any particular Order; and the young Caterpillars when hatched immediately ſeek their Food.

They are to be found moſt plentiful on ſuch Willows as grow on Ditch-ſides, and particularly on thoſe Branches which proceed from the Stumps of ſuch Willows as have been cut down. In theſe and ſuch-like Places they may be found of different Sizes, from the Middle of *July* to the latter End of *Auguſt*. It is eaſy to diſcover the Tree on which there is a Brood: For on ſuch Trees the Leaves are eaten in the Manner as expreſſed in the Plate as at (*b*), (*b*), (*b*); and where ſuch Signs as theſe appear, you may be certain there are Caterpillars, if not too late in the Seaſon. When you have found them, be careful how you take them from the Branches, to which they adhere very ſtrongly. The Caterpillars, when full fed, as at (*c*), is near four Inches long, of a fine green Colour, and all over powdered or freckled with minute white Specks. The ſmaller Caterpillars are rather lighter, as may be ſeen at (*d*), which is repreſented in its third ſkin, and (*e*), where they are ſhewn as they appear when juſt coming from the Egg.

The moſt early go into the Earth near the Root of the Willow about the Middle of *July*, and change into Chryſalis, which is ſhewn at (*f*); in which State they continue during the Winter, and the Moth appears the latter End of *May*.

The Hen is painted flying at (*g*), to ſhew the upper Side of her Wings, and at (*h*), in a Poſition which diſcovers the under Side: (*i*) repreſents the Cock ſettled on the Twigs of the Willow.

They fly very ſwiftly by Night, and are ſeldom taken.

A ſmall brown Beetle often lays her Eggs on the Caterpillar of the Eyed Hawk, where they are hatched, and the young ones eat their Way into the Body of the Caterpillar, which goes into the Earth, and changes into Chryſalis. Notwithſtanding thoſe internal Deſtroyers, the Moth comes forth from the Shell at its uſual Time; but the Caterpillars of the Beetle being now increaſed in Size, prey ſo much on the Inſide of its Body, as to kill the Moth, on which they ſtill feed, regularly ſhifting their Skins, till they be full fed, as at (*k*), at which Time they are about three Eighths of an Inch long, having only ſix Legs, which

PL. V

which are ſituated near the Head, and their Backs covered with very long Hair. Having eat their Paſſage out of the Moth, they change into the Nympha ſhewn at *(l)*; in which State they remain about eighteen Days, and then produce the Beetle *(m)*.

The Caterpillar of the above Beetle is the Inſect which makes ſuch Deſtruction in Cabinets of Flies; for it very frequently happens that, among a Number of Moths, as this Beetle does not confine itſelf to the Eyed Hawk alone, ſome one of them will be attended with this Misfortune, and contain within its Body four or five of theſe Caterpillars, which will ſometimes feed for many Weeks after the Moth is dead, eating quite through the Body in many Parts, and running about within Side, raiſe a very light Duſt with their Hairs, which will not only cover the Body of the Moth, but, flying about the Drawer, ſettle, in more or leſs Quantities, on the reſt of the Flies: Nor is this the only bad Conſequence which may be feared from them; for, if the Body of that Moth be not ſufficient to ſupply them with Food till they be fit for their Change, they will betake them to other Inſects perhaps of more Conſequence.

To deſtroy the above Caterpillar, and other ſmall Inſects which deſtroy the Flies, many Aurelians put Camphire, tied up in ſmall Mechlin Bags, into their Drawers; yet I would not adviſe this Method, as it is injurious to the Colours of the Inſects, and I know, by many Inſtances, it hath not the deſired Effect.

To take the Duſt from off the Wings of the Flies I make uſe of a Camel's Hair Pencil, which is firſt made very wet with clean Water, ſtroaking it gently over the Fly. This will effectually take off all the Duſt without wetting the Fly or otherwiſe doing it the leaſt Damage.

The WHITE SATTIN.

THE Female generally lays her Eggs about the Middle of July, which are of a light green Colour, on the Bark of the Willow or Poplar, which ſhe covers over with a white Subſtance much reſembling Silk, and in about twenty Days the Caterpillars appear. They feed the remaining Part of the Summer, during which Time they ſhift about three Skins, and lie concealed during the Winter in a ſleeping State. They may be found full fed, as at *(n)*, about the latter End of June, at which Time they make a Spinning in the Leaves of their Food or in Holes of the Bark of the Tree, wherein they change to a hairy Chryſalis, which is ſhewn as taken out of the Web at *(o)*, and at the Expiration of twenty Days the Moth appears. The Hen is ſhewn flying at *(p)* and the Cock ſitting cloſe-winged on a Leaf of the Willow at *(q)*.

They may be taken in great Numbers by beating the Bows of the Trees they feed on; and, as they fly very ſlow, may eaſily be taken in your Nett.

PLATE

PLATE VI.

The ADMIRABLE.

The Great Stinging-Nettle. *Urtica major vulgaris.* J. B.

THE Female Admirable is generally ſeen to lay her Eggs, about the latter End of June, on the Great Stinging-Nettle; in doing which ſhe flies from one Nettle to another, diſpoſing of her Eggs ſingly one on a Leaf, and at ſuch a Diſtance from each other, that ſometimes her Store of Eggs will be extended or diſtributed over two or three Fields. This ſhe does for the more certain Security of ſome of them; and ſo careful is ſhe for the Safety of her young Brood, that I have often perceived her, when about to lay an Egg, creep in among the Nettles; which I imagine is not only to place the Egg from the Heat of the Sun, but likewiſe to ſee if thoſe Nettles are frequented by Ants, thoſe Creatures being very deſtructive to Caterpillars.

As ſoon as an Egg is hatched the young Caterpillar begins to make him a Place of Security, being of a very tender Nature; and to keep himſelf from the Injuries of the Weather and the Ichneumon which he ſeems to live in continual Fear of, he incloſes himſelf in a Leaf of the Nettle, by drawing with his fine ſilken Threads the Edges of the Leaf cloſe together: Here when incloſed he feeds, eating away that Part of the Leaf which is next the Stalk, which cauſes it to hang down as repreſented at *(a)*: When he hath deſtroyed as much of the Leaf as renders it no longer a Place of Safety, and after ſhifting his Skin, he forſakes his ruined Habitation to go in Search of a Place proper for a new one, which he makes like that already deſcribed. In this Manner he proceeds till ſuch Time as he is grown ſo large that one Leaf is not ſufficient to contain him, when he creeps up towards the Top of the Nettle, where he ſpins himſelf up within the Leaves after eating the Stalk almoſt through, which makes it hang down in the Manner expreſſed at *(b)*. Sometimes he may be found in another Sort of Spinning, which he makes by drawing together the Tops of two or more Nettles that lay moſt contiguous to him; and it often happens, as ſome one Nettle, whoſe Aſſiſtance he wants to compoſe his Houſe, may be at too great a Diſtance; to make it incline more ready for his Purpoſe, he eateth away the Stalk on the further Side, cauſing it to bend towards the intended Place.

In ſearching for this Caterpillar you will frequently percieve a Nettle hanging down as if it were broke, with its Leaves quite withered and dry. This is done by the Caterpillar of the Admirable; and if you ſearch among thoſe dead Leaves you will find his Spinning, and moſt likely the Caterpillar or Chryſalis, for he ſeldom does this but when ready for his Transformation, which happens with the moſt early Caterpillars about the Beginning of Auguſt.

To her Grace the Dutchess of Grafton

This plate is most humbly Inscribed by her Graces most Obedient & faithful Serv.t

Moses Harris

The Caterpillars are of various Colours, ſome appearing of a light yellow, or Amber-Colour, as at *(c)*; others almoſt black, like that at *(d)*; both which are ſeen in their laſt Skins. The younger Cateprillars are black, freckled with ſmall Specks of Yellow; as at *(f)*.

When they are full fed, they generally faſten themſelves up by the Tail within their Spinnings, and change to the Chryſalis, though they ſometimes may be found in that State hanging openly under a Leaf, as at *(e)*, or any other Place they find convenient. Why they change, thus naked and expoſed, contrary to their Nature of concealing themſelves as well in this State as that of the Caterpillar, is what, with any certainty, cannot be accounted for: but the Reaſon that appears moſt likely to me is, that the Earwigs, which often, in great Numbers, get into their Incloſures, obliges them to retire, and, being near the Time of their Transformation, are too weak to make a freſh Spinning; for I have often found, when in Search of the Caterpillar, their Spinnings crowded with thoſe Vermin.

The Chryſalis is of a Pearl-Colour, covered with a fine Bloom reſembling that which is ſeen on the Plumb; but the Chryſalides which have this Appearance are thoſe only which are found in the Fields; for thoſe produced from Caterpillars which are fed within Doors, are of a dirty Brown, ſometimes embelliſhed with ſmall Spots of Gold. They lay in Chryſalis twenty-one Days, and then produce the Fly called ADMIRABLE from the great Variety and Beauty of its Colours. The Male is ſeen flying at *(g)*, ſhewing the upper Side of his Wings. The Female is repreſented at *(h)*, ſitting on the Nettle. She is larger than the Male, and may be known by an additional white Spot which is ſituated in the red Part of the upper Wing.

They fly in unfrequented Lanes and Places which are over-run with Brambles, on the Bloſſoms of which they very frequently ſettle. They are very quick ſighted, extremely timorous and ſwift of Wing, and, if they find they are purſued, will betake them to ſome high Tree where they will ſtay till their Fright is over, or till ſuch Time as they think the Danger paſt.

The SMALL MAGPIE.

THE Caterpillars of the ſmall Magpie are produced from Eggs of a yellow or buff Colour, which are laid on the Great Stinging Nettle by the Hen Moth about the Beginning of June. The young Caterpillars, as ſoon as they are hatched, divide or ſeparate themſelves, each one infolding himſelf within a Leaf, the Edges of which is faſtened together by a white Spinning, much after the Manner of the Admirable at *(a)*.

Within

Within ſuch Spinnings they continue to feed till the Approach of the cold Weather, when they begin to change their Colour, which was of a light tranſparent Green, to a red, or, rather, Roſe-Colour, as is ſhewn at *(m)*. They then forſake their Food, and each Caterpillar ſpins himſelf up within a thin buff-coloured Caſe, through which the Caterpillar may be plainly ſeen as deſcribed at *(n)*. When they have laid in this Manner about one Month, or more, they loſe their Redneſs, and appear of the ſame Colour with the Caſes which contains them. They then remain without any farther Alteration till the Middle of May, about which Time they change to brown ſhining Chryſalides, as repreſented at *(o)*; and in about fourteen Days the Moths appear. The Hen is ſeen flying at *(p)*, ſhewing the upper Side of her Wings.

They ſeldom fly far from the Place where they are produced, for, though on diſturbing the Nettles they fly out in great Numbers, yet they immediately take to the Nettles again, ſettling on the under Side of the Leaves with their Wings ſpread flat.

PLATE VII.

THE ELEPHANT.

White Ladies Bedſtraw. *Gallium Album.* GER. 967.

THE Caterpillar of the Elephant, or Bedſtraw-Hawk, is produced by Eggs of a greeniſh white Colour, which are laid by the Hen Moth, on the White Ladies Bedſtraw, in the Manner repreſented at *(a)*. Theſe Eggs are commonly hatched in about eight or nine Days. When the young Caterpillars come forth from their Eggs they appear of a fine green Colour, as may be ſeen in the Plate where they are crawling from the Eggs, and at *(b)* and *(c)*, where they are ſhewn in their ſecond and third Skins. Many continue to be of this Colour till they appear in their fifth Skins, though others loſe that Appearance ſooner. When they are in their ſixth and laſt Skins, they are of a deep brown on the Back, which ſoftens downwards, towards the Belly, to a buff Colour. It is likewiſe marked all over with ſhort Strokes of black, which croſſing each other compoſe irregular ſmall Squares. On the fourth and fifth Joints, or Rings, from the Head, is placed two Marks, which have the Appearance of Eyes, and which are incircled with a deep black. From hence to the Head it grows taper, the Head being very ſmall:

To his Excellency Baron Knipbauſsen, Embaſsador from his Pruſsian Majesty,
to the Court of Great Britain, This Plate is most humbly Inscribed,
by his Excellency's most Obliged & faithful Servant Moses Harris.

ſmall: And it is remarkable in this Caterpillar, that it can draw the three firſt Joints with the Head into the Body, or extend them, at Pleaſure; the Manner of which is ſhewn at *(d)*. When they are full fed, as at (*e*), they make a light Spinning among the Food, in which they lay four or five Days, and are greatly diminiſhed in Size before they change to the Chryſalis ſhewn at *(f)*, which muſt be conſequently ſmall, conſidering the Size of the Caterpillar by which it is produced. They remain in Chryſalis during the Winter, and the Moths appear the latter End of *May*.

The Hen is ſeen flying at *(g)*, ſhewing the upper Side of her Wings, and the Cock at (*h*), as ſettled on the Bedſtraw in a Poſition which diſcovers the under Side.----I never knew any of them to be taken in the Fly State.

As the Bedſtraw generally grows in or by the Side of the Water, it ſometimes happens that the Caterpillar falls in, either through the Weakneſs of the Plant and the Weight of ſo large a Caterpillar, or the Wind violently ſhaking the Food; but he generally ſurvives this Accident, for he immediately riſes to the Top of the Water, which bears him up till, by the Currents driving him, or his own ſtrugling, he attains to ſome Part of the Plant, by which he crawls up and ſaves himſelf.

It is to be obſerved that the aforementioned fourth and fifth Joints are conſiderably larger than the reſt, and appear to ſwell out. This induced me to think that this Part contained a Quantity of Air which was placed there by Nature on Purpoſe to aſſiſt him in the above Extremeties; and what ſeemed to confirm me in this was, my being in Search one Day after theſe Caterpillars, by Accident let one fall into the Water, when I obſerved the Head with the three ſmaller Joints adjoining, was above, and the thick Part even with, the Surface.

This Caterpillar being quite naked, and in no Way capable of defending itſelf, is frequently deſtroyed by his deſtructive and fatal Enemy the Ichneumon, which ſettling on the Back of the Caterpillar layeth her Eggs thereon, together with a ſtrong gummy Matter, which cauſeth the Egg to adhere ſo firmly as not by any Means to be taken off without tearing, or otherways wounding, the Caterpillar. When the Egg is ready to hatch, the young Caterpillar within does not proceed from the Egg outwardly or upward, but, making his Way through that Part of the Egg which is fixed to the Back of the Caterpillar, eating downward into its very Body: Nor does the Caterpillar, which is attended with this Misfortune, appear any Ways ailing, but eateth its Food freely; and, when full fed, maketh its Spinning and changeth to the Chryſalis; but, about the Time when the Moth is expected, the Ichneumon appears, which is ſhewn flying at (*i*). The Elephant Chryſalis at (*k*) is repreſented with Part of it broke open, ſhewing the Ichneumon within as it appears when near the Time of its coming out in the Fly State.

THE SMALL WHITE CHINA MARK.

THE Caterpillars ſhewn at (*l*) (*l*) feeds, ſpun up in the Duck-Weed, which is often ſeen to cover intirely the Surface of Ponds, and is diſcovered by little Lumps or Riſings on the Weed, ſuch as is repreſented at (*n*) (*n*). Theſe are the Spinnings of the Caterpillars. The Web with which he joins the Leaves together and infolds himſelf within, is white, and conſiſts of three or four different Coverings or Caſes, and are ſo very ſtrong that it is difficult to pull them open with the Fingers without deſtroying the Caterpillar or Chryſalis incloſed. Within theſe Spinnings they change to the Chryſalis, as at (*m*), and the Moths appear in about fourteen Days, which are repreſented at (*o*) and (*p*). The Hen at (*o*) is larger than the Cock, and her upper Wings appear of a browniſh Colour, while thoſe of the Cock are perfectly white. There is two Broods a Year. The Caterpillars of the latter Brood change into Chryſalis the Beginning of *Auguſt*, and produce their Moths about the Middle of that Month, laying their Eggs ſoon after. The Caterpillars proceeding from theſe Eggs lay all the Winter ſpun up in the Duck-Weed, change into Chryſalis the Beginning of *May*, and produce their Moths in fourteen Days.---They fly in great Plenty over the Surface of Ponds.

And, when GOD had created Male and Female of every Kind, He made Man to reign over the Beaſts of the Field, and to contemplate the Wonders of His Works; for the Subſiſtence of which, GOD ſaid, Behold! I have given you every Herb bearing Seed; to you it ſhall be for Meat: And to every Beaſt of the Earth, and to every Fowl of the Air, and to every Thing that creepeth upon the Earth, wherein there is Life, I have given every green Herb for Meat.

GENESIS I. 30.

O GOD! how wonderful are Thy Works! For ever bleſſed be the Name of the LORD!

PLATE

To Sir Henry Ecklin Baronet
This Plate is humbly Inscribed by his most Obliged & Obedient Servt. Moses Harris.

PLATE VIII.

THE WATER BETONY MOTH.

Water Betony. *Scrophularia Aquatica Major.* C. B. Pin. 235.

THE proper Food of this Caterpillar is Mullein, though they are frequently found in Plenty feeding on the Water Betony. The firſt Appearance of the Caterpillar is about the latter End of *May*, or Beginning of *June*; from which Time they may be found till the Beginning of *July*; therefore the beſt Time to ſearch for the Caterpillars is about the Middle of *June*, when the greater Part are in their laſt Skin: when they appear of the Size of that repreſented at (*a*) they are of a beautiful clear white, prettily ſpotted, and ſtreaked with black, with ſome few Stains of yellow: The Head doth much reſemble a human Scull, for which Reaſon it hath ſometimes been called the Caput Mortuum, or Death-Head.

It is remarkable in theſe Caterpillars, that they commonly eat their Skin after they have thrown it off; and, ſhould they be ſo far neglected as to want Food, they will fall on and devour one another. When they are full fed, they go into the Earth about a Finger deep, where they make a thick Caſe of Earth, like that at (*b*) which they ſpin together with their Web, wherein they change to the Chryſalis, which is of a reddiſh brown, as is repreſented at (*c*) they remain, during the Winter in this State, and the Moths appear about the Middle of *April*. It is repreſented flying at (*d*) and in a ſetting Poſture at (*e*).

They are very ſeldom taken in the Moth State by reaſon they fly by Night: The beſt Place that I know to take the Caterpillars is on the Water Betony, which grow plentifully againſt the Bank on the Right-Hand Side the Road leading from *Bagnigge-Wells*, towards *Pancras*.

THE PEACOCK FLY.

THE Female Peacock layeth her Eggs the latter End of *April*, or the Beginning of *May*, on the Top Part of the Great Stinging-Nettle, placing them generally on the Stalk close under the young budding Leaves, to preserve them from the too violent Heat of the Sun, where they are hatched in a few Days. The young Caterpillars, as soon as they approach from the Eggs, inclose themselves together in a very fine tender Web, drawing at the same Time the Leaves to cover them, as much as they can, that they still may receive the Benefit of their Shade; in this first Skin they are of a greenish white, and appear naked and shining, not unlike Maggots; in the second Skin they appear brown and shining, which Appearance continues till they are in their fourth Skin, at which time they are quite black. After the shifting of each of their different Skins, which they always leave in their old Spinnings, they extend their Web farther, and will sometimes divide themselves into two or three separate Colonies, more especially if the Nettles where the Brood is are thinly scattered.

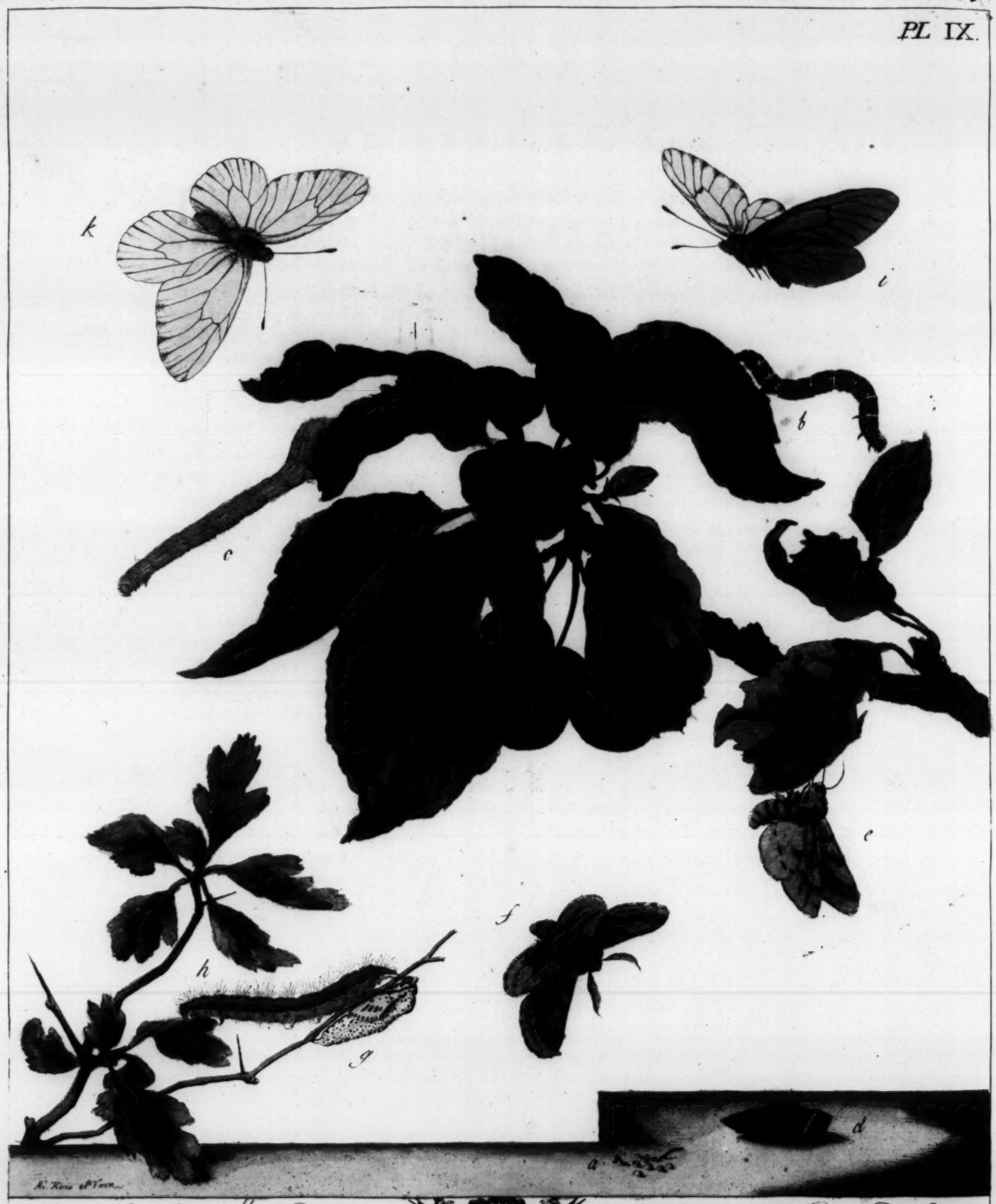
When they are in their last Skin, as at (*g*) they quite forsake their Web, and feed separate, at which time they are about two inches long, and thick in proportion, they are of a fine deep black, and all over powdered with small white Specks; the head, and six hooked Legs, are black and shining; the eight middle Legs, with the Holders behind, are light red, or Flesh-Colour, on the Back and Sides; they are armed with black branched Spikes, which are about a Quarter of an Inch long; at the Bottom of each of these something appears to shine or glisten, as they move along, like small Sparks, or Diamonds, which causes them to have a beautiful Appearance.

When full fed, they hang themselves up by the Tail, in any convenient Place, in the Manner shewn at *(f)*, and, in about twenty-four Hours, the Skin slips off, and the Chrysalides appear, which is first green and tender; but one Hour is sufficient to harden the Shells against the Injuries it might receive by the Plants being shaken by the Wind, or by their being blown against the Place, on or near which they have hung themselves. The Chrysalis is represented at (*b*), in which State it continues about nineteen Days, and the Fly comes forth.

The Female is seen flying at (*i*); she is much larger, and her Colours lighter than the Male, which is shewn sitting on the Water Betony, with his Wings shut to shew the under-side of them.

They continue in the Fly State during the Winter, and appear very soon in the *Spring*: I have seen them flying in the Month of *February*, when the Snow has been on the Ground.

They fly in Lanes about Banks and Ditches, where Nettles grow, settling on the Heads of the Teasel and Furzes of the Docks.



To the Right Hon.ble Lord Viscount Charlemont, this Plate is Humbly Inscribed by his Lordships most Obliged & Obedient Serv.t Moses Harris.

Although the Caterpillars of the Peacock appear to be ſufficiently armed by Nature againſt the Attacks of the Ichneumon, yet the ſmaller ſort will get between the Spikes of the Caterpillar, where they effect its Deſtruction, by piercing him with their Tube, through which they convey their Eggs into its Body: And about the Time when the Caterpillar is full fed, and near the Time of Change, the Maggots of the Ichneumon make their Way out on all Sides; leaving the Caterpillar expiring. Theſe Maggots in a ſhort Time ſpin themſelves up in thin ſilken Bags or Caſes; and produce their Ichneumons in about fourteen Days. But provided the Caterpillar is in its laſt Skin, when pierced by the Ichneumon, though I know that two Days is a ſufficient Time for Maggots to be formed, yet they will not have Time ſufficient to render him too weak for changing into Chryſalis; ſo that the Maggots feed on the Inſide of the Chryſalis, and there change to the Nympha; and about the Time when the Fly is expected, the Ichneumon Flies appear from a ſmall round Hole in the Chryſalis, which they make to faciliate their Eſcape.

PLATE IX.

THE BRINDLED BEAUTY.

The Morel Cherry. *Ceraſus.*

THE Caterpillars feed on moſt Fruit-Trees, as well as on Privit Lime, Elm, *&c.* in the Cracks and Holes of the Barks; of which, about the later End of *April*, the Female Moths depoſite their Eggs. The Caterpillars are nearly black in their firſt Skins, as ſhewn at *(a)*, where they are repreſented as coming from the Eggs, but grow rather lighter as they increaſe in Size; when they are in their laſt Skin, ſome appear ſmaller, and darker coloured than others, which I take to be thoſe which produce the Cock-Moth, and are repreſented at *(b)*; theſe are of a deep Cinnamon-Colour, prettily diamonded on the Back with black, and ſpotted with yellow. The larger and lighter Sort are ſhewn in a Poſition which they are commonly ſeen in when at reſt at *(c)*; they go into the Earth about the Beginning of *July*, and change into Chryſalis, which is ſeen at *(d)*, and continue in that State during the Winter. The Moths appear the Beginning of *April*,

April. The Hen is ſhewn at *(l)*, hanging or creeping on a Leaf, ſhewing the under Side of her Wings; ſhe may be known from the Cock by her Horns, which appear like fine Threads, while thoſe of the Cock are comb-like, and very broad.

They may be taken in the Day-Time, ſitting againſt the Barks of the above-mentioned Trees, early in the Spring.

THE BLACK VEINED WHITE.

THE Female Fly lays her Eggs on the White Thorn, about the later End of *June*; and the young Caterpillars, as ſoon as hatched from the Eggs, incloſe themſelves in a ſlight Web, leaving a Paſſage to come forth to feed, which they generally do Morning and Evening, retiring within their Web in the Middle of the Day, to avoid the Heat of the Sun: In this Manner they feed the remaining Part of the warm Weather, extending their Web as they increaſe in Size. At the Approach of Winter, they ſpin a ſtrong Web on one of the Twigs of the White Thorn, wherein they remain without eating during the Winter, and come forth again early in the Spring, feeding very greedily on the Buds and young tender Leaves. Now is the beſt Time to take them, they being eaſily ſeen on Account of their Size, as they lie on their Web altogether, which they do not forſake till they go in ſearch of a convenient Place for their Change, at which Time they appear as repreſented in the Plate at *(b)*. In preparing for their Transformation, they faſten their Tail to the Twig by a ſtrong white Web, after which they carry a ſtrong Thread, that is compoſed of three or four double, over their Back, near the Head; this is likewiſe made faſt to the Twig on each Side: In this Poſition, they retain the Form of the Caterpillar twenty-four Hours, and the Chryſalis apppears, which is of a yellow Colour, beautifully ſtreaked and ſpotted with black, as at *(g)*; they remain in the Chryſalis State twenty-one Days. The Male is ſhewn at *(i)* flying in a Poſition which diſcovers the under ſide of his Wings, where the Markings are ſtrongeſt. The Female is ſeen at *(k)*, ſhe is rather larger, and her black Veins not quite ſo ſtrong as thoſe of the Male.

They fly in Meadows near Corn-Fields, and as they do not fly very faſt, are eaſily taken in your Net.

PL. X

To the Rt. Hon.ble Lady Henrietta Alicia Wentworth
This Plate is most humbly Dedicated by her Ladyship's most obliged & obedient Servt.
Moses Harris.

PLATE X.

THE PURPLE HAIR-STREAK.

The Common Oak. *Quercus Latifolia.* Park. Theat.

THE Caterpillars feed on the Leaves of the Oak, and are found plentiful on ſuch Trees as grow by the Sides of Woods, ſeparate or apart from the reſt; they are full-fed about the latter End of *May*, and are taken by beating the Boughs with a long Pole, provided for that Purpoſe, while a Sheet is ſpread under the Tree to receive the Caterpillars which fall. When full-fed, as at *(a)*, they are about the Size and Form of the Millipedes, or Wood-louſe of a brown Colour, inclining to the orange, with oblique Markings on the Side; the Head is very ſmall, and lies a little concealed under the firſt Joint, or Ring; ſo that, at firſt Sight, it is not eaſy to diſcover the Head from the Tail. They ſeldom creep, but when they do, their Pace is very ſlow. They prepare for their Change, by hiding or concealing themſelves in the Hollows or Foldings of the Leaves, or againſt the under Part of the Twigs, as at *(b)* and *(c)*; where they faſten themſelves by the Tail, and round the Middle with a very ſlight and tender Spinning, which is ſo very fine, as ſcarcely to be ſeen by the naked Eye. The Fly appears in twenty-one Days.

The Male is ſeen flying at *(d)*, ſhewing the upper Side of his Wings, which are of a dark brown or black, with a blue Spot on each of the upper Wings, which appear of a Brightneſs equal to Brimſtone on Fire. The Female ſhows her upper Side at *(e)*, which appears of a dark brown; but, on turning it about, or altering its Poſition, the Eye is agreeably ſurprized with a fine glowing Purple. The under Side is ſhewn at *(g)*, which of Male and Female are much alike.

They fly high, delighting to ſettle on the Leaves of the Oak, and are commonly taken in Plenty in *Oak--of-Honour* Wood, near *Peckham*, in *Surry*. The Caterpillar *(f)* is repreſented as one that has been pierced by the Ichneumon, and the Maggots making their Way through the Skin of the Caterpillar, after which they ſpin themſelves up in white Caſes, as at *(b)*, where they are repreſented as coming to the Fly State.

THE SILVER LINES.

THE Caterpillars are taken by beating the Boughs of the Oak the latter End of *September* and the Beginning of *October*, which is about the Time they are in their laſt Skin; they then appear at *(i)* of a light green, marked all over with irregular Spots of white. On each Side is a Line of light yellow, which reaches from the Head to the Tail: A Circle of the ſame appears round the Neck and the two Legs, or Holders, at the Tail, which are of a remarkable Shape and Length; on each of which appears a Spot of bright red, or crimſon Colour. This Caterpillar adheres ſo very ſtrongly to the Twigs and Branches, that it is very difficult to take them off, if at all, without Damage.

When full fed, they ſpin a ſtrong Caſe, which appears not unlike the Bottom of a Boat, wherein they change to a fleſh-colour'd Chryſalis, marked or ſhaded on the Back with Purple, as is ſhewn at *(k)*. The Moth appears the latter End of *May*.

The Cock is ſhewn flying at *(l)*, and the Hen in a ſitting Poſition at (*m*). There is no very viſible Difference; the Cock appears a little leſs, and ſomewhat darker than the Hen.

The upper Wings are of a light yellow green, with three white Lines, which croſs each Wing in an oblique Direction, which appears to ſhine a little like Pearl: The Body and Under-wings are of a greeniſh white, as is all the under Side: The Horns and Legs are red. They ſeldom are ſeen flying, but will frequently fall in the Sheets when you are beating the Oak for the Caterpillars, which feed thereon in the Spring. They will lie for ſome Time in the Sheet as if dead; nor can you tell whether they are dead or living; but you are ſoon relieved from your Uncertainty, by their ſtarting ſuddenly, and flying away.

THE PEA-GREEN.

THE Caterpillar is of a fine Green, and feeds ſpun up in the Leaves of the Oak. It may be taken full fed by beating about the latter End of May, when it appears of the Size and Form of that repreſented at *(y)*, which is ſhewn hanging by his Thread or Web, by which it frequently lets itſelf down when in Danger or diſturbed in its Spinnings. It changes into the Chryſalis *(z)*, infolded in the Leaves about the Beginning of June, and the Moth appears the latter End of that Month. It is ſeen flying at *(2)*, and in a ſettling Poſition at *(1)*. They fly by Day and are very common.

THE DUN-BAR.

THE Caterpillar feeds on the Oak, and is found full fed the latter End of May. It then appears as at *(n)* of a light tranſparent Green, with a Mark of light Yellow on each Side. On the two firſt Rings, or Joints, next the Head, is a Row of ſmall black Specks, which lie all over the Back, reaching from Side to Side; and, on viewing it cloſely, a few fine Hairs may be diſcovered on every Ring or Diviſion, it makes a Spining in the Leaves of the Oak, and changes to a red Chryſalis covered with a fine Bloom, as at *(o)*. The Moths appear in July. It is repreſented flying at *(r)* ſhewing the upper Side. The under Side is ſeen at *(q)*. Some of this Kind of Moths differ ſo much from each other, that they do not appear to be of the ſame Species.

THE SCALLOPED WINGED BROAD BAR.

THE Caterpillar feeds on the Oak and Hazel, and is found about the Beginning of October. It is about an Inch and an Half long, of a brown Colour with a ſmall double Line along the Sides reaching from the Head to the Tail. It has two Protuberances under the Belly, which are ſituated near the four Holders behind. It goes into the Ground the Middle of October, where it makes a ſtrong Caſe of Earth, as repreſented at *(t)*, which is ſpun and interwoven with their Web. They change into a red Chryſalis, which is ſhewn at *(u)* as taken out of the Caſe, the Moth appears the Beginning of May. The upper Side is ſeen at *(w)*, and the under at *(x)*, which is repreſented as hanging or creeping on a Leaf. They are ſeldom taken in the Fly State.

PLATE XI.

THE PAINTED LADY.

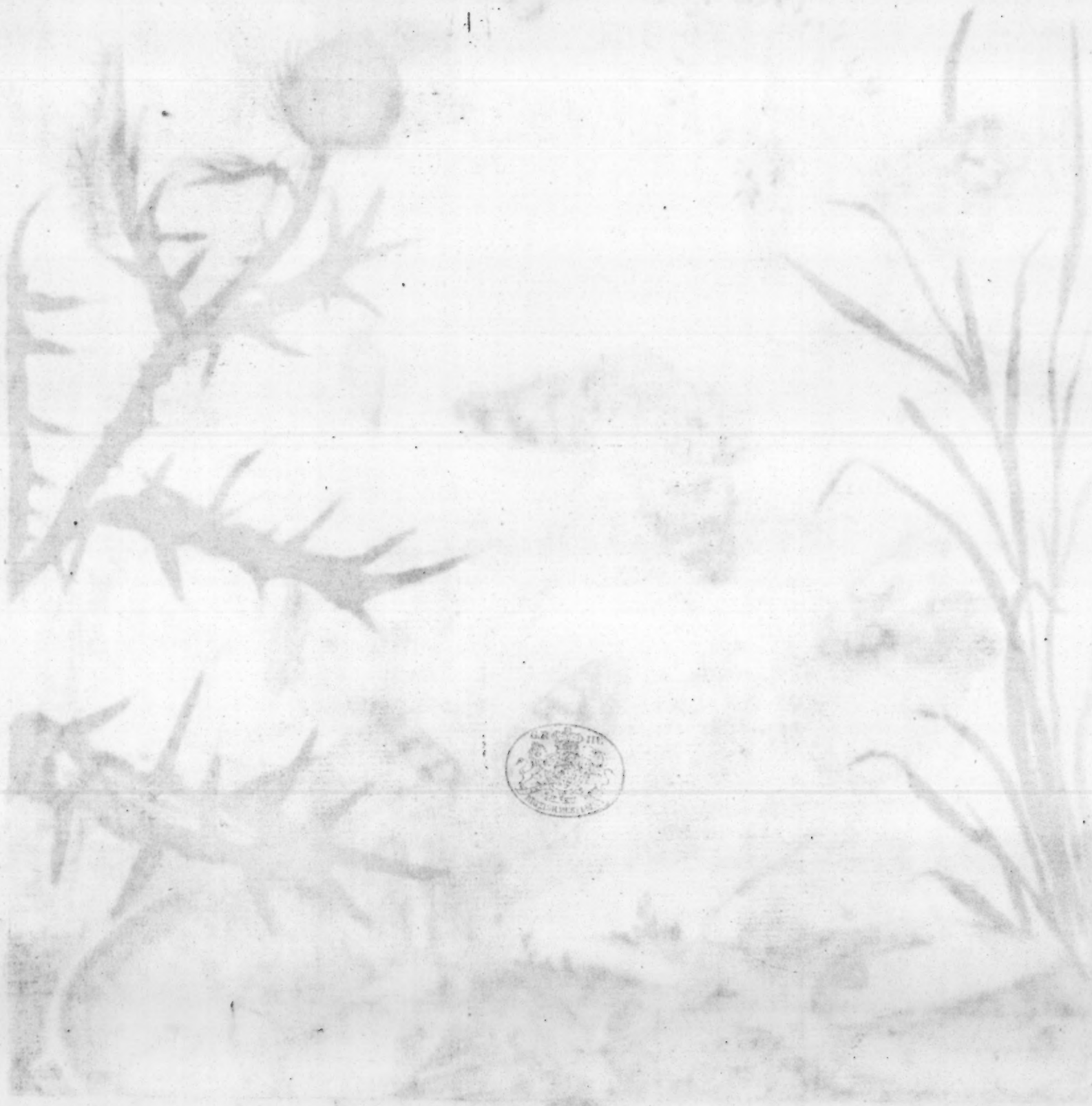
THE THISTLE.

THESE Flies are not very common; the Reaſon of which is, all Weathers do not agree with them; yet there are particular Seaſons when they are very plentiful, which happens once in about ten or twelve Years. They are then often ſeen in Town flying in the Streets. The Female Fly lays her Eggs on the Dock and Thiſtles about the Middle of June, depoſiting them on a Leaf in the ſame careful Manner as the Admirable. There are various Colours of the Caterpillars, ſome appearing Dark or nearly Black as at *(a)*, others Lighter and more of a yellowiſh Caſt, as ſeen at *(c)*. They are found covered with a thin Spinning on the upper Side of the Leaf, in the Manner of that at *(a)*, to ſecure itſelf from the Weather and other Accidents, within this Web it feeds, leaving the thin membranous Part to ſupport it in its Habitation; ſo that the Leaf appears to be eaten but Half Way through, It forſakes its Web when fit for its Transformation, which happens about the Middle of July, and finding a convenient Place in the Shade, faſtens itſelf up by the Tail with a ſmall but very ſtrong Web, and changes into Chryſalis, in which State the Male and Female may be eaſily diſtinguiſhed from each other. The Male is of a Dark Brown, embelliſhed with Gold, as at *(d)*. The Female is rather lighter, and ornamented with Silver, as ſhewn at *(b)*. The Fly appears in fourteen Days. The Female is ſeen flying at *(f)*, ſhewing the upper Side of her Wings: The Male at *(c)* in a Poſition which diſcovers the under Side. They are taken in the Fly State all the Month of Auguſt, and haunt Waſte Grounds, Rubbiſh Hills, &c. ſettling on the Furzes of the Docks and Bloſſoms of the Thiſtle.

THE MARMORESS, OR MARBLED WHITE.

THE Eggs by which theſe Caterpillars are produced, are, when firſt laid, of a yellowiſh Colour; then, in two or three Minutes, changes to a clear and pleaſant White. They appear perfectly round and very ſmooth, which cauſes them to roll very freely and nimbly about like ſmall Globules of live Mercury or Quickſilver, ſo that, as ſoon

To the Rt. Hon.ble Lady Charlott Townshend Baroness Ferrers
This Plate is most humbly Dedicated by her Ladyships most obliged & Faithful Servts
Moses Harris J. Gretton



To the Right Honourable Countess of Dalkeith

This Plate is most humbly Dedicated by her Ladyships most Obliged & Obedient Serv.t

Moses Harris

ſoon as voided from the Fly they fall among the Graſs to the Ground, rebounding from all Obſtruction, and reſting at length in ſome ſmall Crannie of the Earth, their globular or ſphere-like Form defending them from the Injuries they might otherways ſuſtain by what they ſtrike againſt in their Fall; theſe Eggs are hatched in about fourteen Days.

The Caterpillar feeds on Hay-Graſs, thriving but ſlowly the remaining Part of the Summer, and during the Winter lies concealed, abſtaining from food till April, then feeding again on the freſh and tender Graſs, becomes full fed about the beginning of June, as it appears at *(g)* they Change into Chryſalis on the ground, as at *(b)* and the Fly appears at the Expiration of Twenty One days. The Male is repreſented flying at *(k)* diſplaying the upperſide of his Wings, the underſide is ſhewn at *(l)*. The Female is not unlike the Male on the upperſide, but the underſide appears of a Yellow Caſt; in particular the underwings; the markings of which are of an Orange, or Yellow Brown Colour, as may be ſeen at *(i)*. They fly in meadows, and Fields of Mowing-Graſs. They do not range or ſtray from the Fields in which they were bred, for tis common to ſee them, in a plentiful ſeaſon, Forty, Fifty, or an Hundred on the wing together, and perhaps in the Field or Meadow adjoining not one to be ſeen; they may be taken good for about Ten Days, or perhaps a Fortnight; after which they may be ſeen in Copulation with the Females; which I obſerve in all the ſpecies both of Moths and Butterflies that have come under my obſervation to appear later then the Males, and tis common, in Butterflies eſpecially, to take the Females in good condition, when the Males are quite waſted and decay'd, they ſeldom fly high unleſs when wantonly playing together, when I have ſeen them fly ſo high, that my ſight has wanted ſtrength to follow them any further.

PLATE XII.

The LARGE MAGPIE.

The CURRANT-TREE. Ribes major fructu rubro, Hort. Eyst.

THE Caterpillar of this Moth is produced by a ſmall round Yellow Egg which is laid by the Hen on the Branches of the Whitethorn, Blackthorn, and Currant-Tree, about the middle of July. They feed the remaining part of the Summer and remain during the Winter on the Branches; adhereing very ſtrongly thereto by their Feet

Feet or hind Holders; in this manner, fixed and motionleſs, I have often found them in the middle of Winter. In about April they begin to feed again and arrive at Maturity as at *(f)* the beginning of June: they then ſpin a very weak Web againſt the Branches wherein they change to the Chryſalis as appears at *(g)* and the Moth appears in twenty-one days. The Hen is ſhewn flying at *(h)*. The Cock in a ſitting poſition with his Wings cloſed at *(i)*. They Fly in the evening after Sunſet.

The GRAND SURPRIZE. Or CAMBERWELL BEAUTY.

THIS is one of the ſcarceſt Flies of any known in England, nor do we know of above three or four that were ever found here, the firſt two were taken about the middle of Auguſt 1748, in Cool Arbour Lane near Camberwell; the laſt in St. George's Fields, near Newington Butts, the beginning of that Month; but as theſe appeared very much faded and otherways abuſed, I conclude they appear from the Chryſalis, with the Peacock, about the middle of July, and being of that Claſs tis reaſonable to ſuppoſe they live thro' the Winter in the Fly ſtate, and lay the Eggs in Spring that produce Flies in the July following; for in the ſame manner do all the Flies of this Claſs, and as all that have yet been taken were found flying about Willow-Trees tis the common opinion of Aurelians that their Caterpillars feed thereon; but their Caterpillar and Chryſalis is to us intirely unknown, and the food a mere conjecture. I do intend to make a ſtrict ſearch concerning them and ſhould I make any diſcoveries worthy note I ſhall find a proper place and repeat it. The Fly in the plate at *(d)* was drawn and Coloured from a beautiful large Female in the Cabinett of Charles Belliard Eſq; which is the fineſt we have in England; the underſide is ſhewn at *(e)*. The Caterpillar and Chryſalis were drawn from thoſe of M. Roſels who gives the following account of this Fly.

'This Caterpillar which is the largeſt of this Claſs, ſays he, is called the So-
'ciable Caterpillar becauſe never found alone, but always to be met with in com-
'pany with others of its kind, they feed on all kind of Willow-Trees and exiſt
'all the Summer, the reaſon why they are ſcarcer than others of this Claſs, is be-
'cauſe all kind of weather does not agree with them.

'The Females lay their Eggs cloſe together on the Branches of the Willow,
'tho he never could find any in their maturity but found only the empty huſks in-
'ſtead of the full Eggs and the young brood near thoſe, in their firſt Skin they ap-
'pear of a Dark Brown and lie all cloſe together on a web, each of them in
'creeping ſpins a Web whereon it ſuſtains itſelf, the which ſerves them likewiſe
'for a Ladder or Bridge to tranſport them from one Leaf to another.

When

To the Right Honourable.
This Plate is most humbly Dedicated
by her Ladyship's most obliged & obedient Serv.t
Countess of Ailesford
Moses Harris

‘ When they are full fed as at *(a)* the body is garniſhed with ſhort grey Hair or ‘ Down, the Prickles on the back are about a quarter of an Inch in length and ‘ appear branched. The Head is formed like a Heart and is covered with very ſmall ‘ blunt Points, which produce or exhibit a languid Gloſs. On the back ap- ‘ pear eight or nine ſquare Orange-Coloured Spots. When they are near the ‘ time of their Transformation they retire to a place of Shelter from Storms and ‘ Sunſhine, there fixing their hind Legs by a Web with their Heads downwards ‘ bent towards their Belly as at *(b)* and in a Day's Time or ſomething longer the ‘ Skin ſlips off and the Chryſalis appears as repreſented at *(c)* they hang in that ‘ ſtate about fourteen Days and then produce a Butterfly.

‘ When the time approaches for the Females to lay their Eggs, they ſeek a ſe- ‘ cure retreat among the Willows, and lay their Eggs on the Branches, if it hap- ‘ pens to be in the warm part of the Summer, they will be hatched in two or ‘ three Weeks Time; but ſhould it happen late in Autumn they remain in the Egg ‘ the whole Winter, and are not hatched till the following Spring: the Male and ‘ Female die ſoon after Copulation even in the ſame Year they were produced, ‘ tho' ſome are thought to live, and conceal themſelves during the Winter.

PLATE XIII.

The SILK-WORM.

The MULBERRY-TREE.

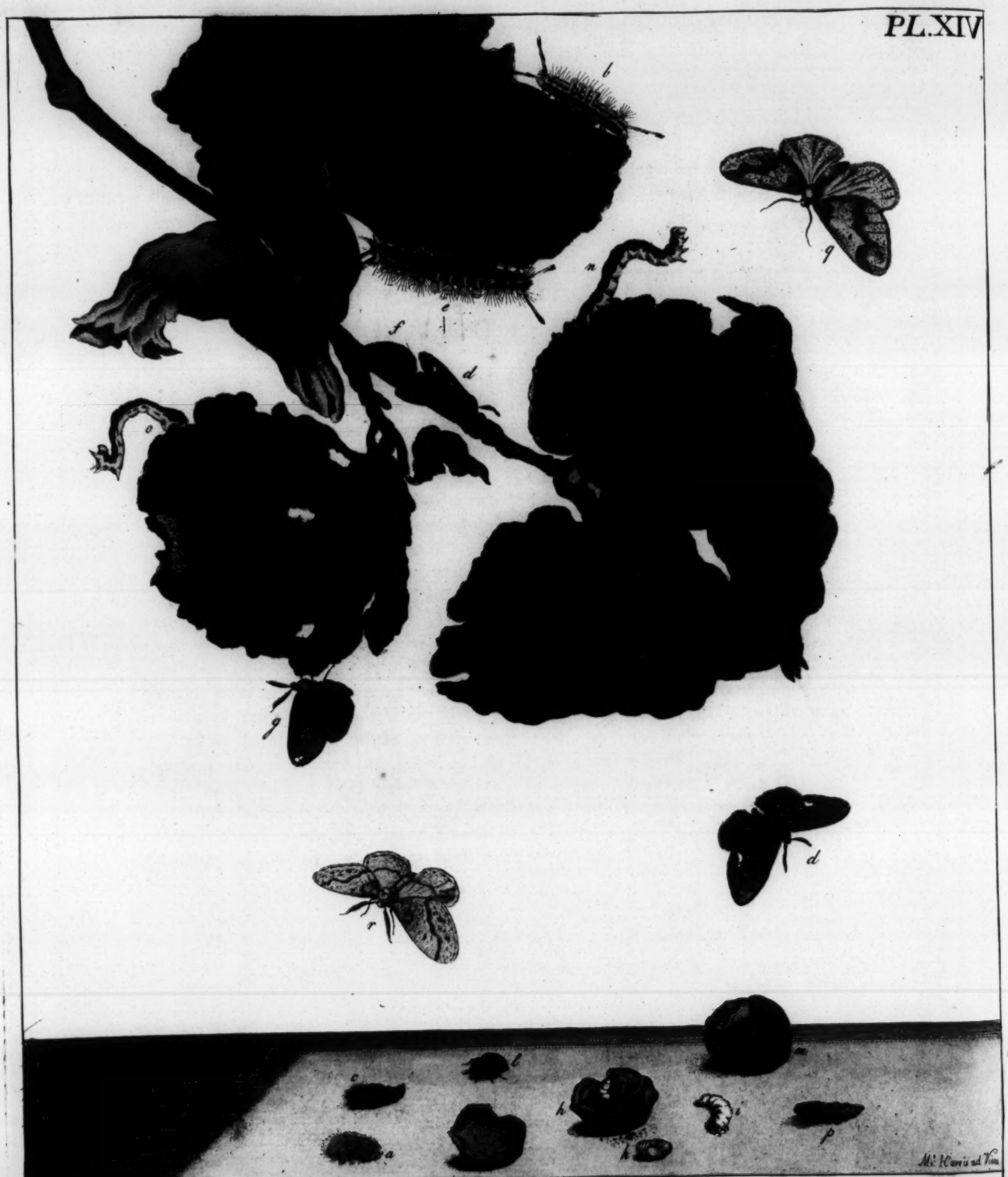
THE Worms, or Caterpillars, are produced by Eggs, the Shape, Colour, and Size of thoſe at *(a)* about the beginning of May, or ſometimes ſooner; and if the Mulberry Leaves, which is their proper Food, are not put forth, the young Caterpillars may be fed with Lettice: they are naturally tender, and ſubject to ſeveral Diſeaſes, to prevent which, thoſe, whoſe buſineſs it is to keep them for the ſake of their Silk, keep them very clean and dry, often removing them for Change of air, perfuming the Room wherein they are fed with Incenſe; they likewiſe ſuffer by Thunder, Firing of Guns or any harſh Sound; when full fed as at *(b)* they grow reſtleſs, and appear tranſparent, ſoon after they ſpin themſelves up each in a Yellow Silken Caſe as at *(c)* and change into Chryſalis, which I have deſcribed at *(d)* as taken out of the Caſe; this happens about the middle of June. In this State they remain about eighteen or twenty Days, when the Moths appear.

They

They copulate ſoon after they come from the Chryſalis, and lay their Eggs, which remain in that State during the Winter, and are hatched the inſuing Spring: the Cock and Hen I have ſhewn in copulation: the Cock at *(e)* and the Hen at *(f)*; the diſtinguiſhing difference is, that the Cock is much leſs, particularly in Body; and his Horns comb-like and broad.

The LARGE TYGER.

THE Eggs, which produce the Caterpillar of this Moth, are laid by the Hen in about July, on or near the Plants which are proper for their Suſtenance: ſhe fixeth them faſt by a glewy Matter diſpoſing them in a very regular and beautiful Order: they are of a light Yellow-Green-Colour and appear gloſſey. The young Caterpillars ſeparate as they leave the Eggs and go in ſearch of food, which is chiefly the Great-Stinging-Nettle, tho' there are few Plants they will refuſe; when the cold Weather approaches, they betake them to Places of retreat and ſecurity, and where they may be ſheltered from the Rigour and Inclementcy of the Seaſon in that motionleſs and ſleeping State in which all Caterpillars of this Claſs lie during the Winter. In the Month of April they again appear, but I would not adviſe them to be ſought for till the middle of May, when they are larger and appear in greater Plenty. They are found by beating the Nettles, which grow on Bank-ſides, with a Stick, which cauſes the Caterpillar to role himſelf inſtantly up in the form of a Hedge-hog, and roll down the Bank to the Ground; you will now find them of many different Sizes, ſome appearing very ſmall, ſcarcely a quarter of an Inch long, others an Inch and a half, or two Inches, the largeſt are generally full fed about the latter end of May, as is ſeen at *(b)* when each of them ſpins itſelf up in a light Grey Web as at *(m)* and changes to a Black Chryſalis, the figure of which is ſhewn at *(i)* the Moth comes forth in three weeks. The Hen is ſhewn flying at *(k)* and the Cock in a ſitting poſition at *(l)* the Cock is generally ſmaller then the Hen, and his Horns broader.



To the Rt. Hon.ble Lord Wentworth this Plate is most humbly Dedicated
by his Lordships most Obliged and Obedient Servant Moses Harris.

PLATE XIV.

The NUT-BEETLE.

The WHITE FILBERT.

Corylus Sativa, fructu, Oblongo rubente, Pelicula Alba tecto. C. B.

THE Caterpillar of this Beetle is produced by a very ſmall Brown Egg, carefully laid, and faſtened by the Parent to the Hazle Nut, at the Time when the Nut is very young, and the Coat, or Shell, very ſoft and tender. When the young Caterpillar, within the Egg, is complete by Nature, for which there is no Rule or Determination by Time, it eats its Paſſage through the Shell into the Nut, without ſpoiling the outward form of the Egg, which, for the preſent, ſtill covers the Hole or Puncture. The chief of his Food is now the Coat, or that Part which hardens and in Time becomes the Shell of the Nut. This he feeds on, together with the inward Pulp, till ſuch time as the one becomes too hard, and the other too dry for his Suſtenance: He then begins on the Nut-Kernel, which had he done when the Kernel was very ſmall, he might poſſibly have deſtroyed that which is his future Dependance, and which is all that is allotted him by Nature for Food while in the Caterpillar State. While feeding he ſtill has Regard to the Hole, keeping it open by gnawing away the Sides, cunningly keeping it round and ſmooth; which ſerves to give him Air, and throw out Part of his Dung or Excrement when he wanteth Room, as well for his Paſſage out when Full Fed and ready for his Change, which happens in September or later; and the Nut being ripe and dry, having fallen to the Ground, he then works himſelf through the Hole of the Shell, which he is ſome Time about, as the Hole is much leſs than the Circumference of the Caterpillar; when out, he bury's himſelf in the Earth and changes to the Nympha, in which State he remains during the Cold-Weather; and about the beginning of May aſſumes the Form of the Parent Beetle.

I have given the Draught or Repreſentation of the Hazle-Nut at *(m)* with the Hole where it is generally made by the Caterpillar, of this Inſect. At *(b)* the Nut is broke open, and the Caterpillar diſcovered within, which is ſhewn at *(i)* in full Proportion. The Nympha is ſeen at *(k)* and the Beetle, which it produceth, is exactly deſcribed at *(l)*.

The

The SCARCE VAPOURER.

THE Caterpillar of this Moth is taken by beating the Oak and Hazle on which it feeds; it is generally Full Fed towards the latter end of May, and changes to the Chryſalis, within a Spinning, againſt the Body or Branches of the Tree, and the Moth is produced in about Eighteen Days after.

The Cock is eaſily known from the Hen, even in the Caterpillar State, by his being ſo much leſs than the Hen, as may be ſeen by comparing the Caterpillar deſcribed at *(b)* and *(e)*, but the difference is much more perceptbile in the Moths, for the Hen, tho' much larger than the Cock, has no Wings, nor can it at firſt be perceived that ſhe hath any Legs, but appears altogether a ſhapeleſs Lump; ſhe appears very dull and unwilling to move, nor ever moves far from the Web, wherein ſhe lay when in Chryſalis, but ſits waiting on the Branches, or on her Web for the Cock, which has the Faculty of ſmelling her at a very great Diſtance, ſome ſcruple not to ſay half a mile; however, it is moſt certain, they do ſmell them a great Way off.

There are many Species of the Moth Kind beſide this that find their Hens by the Scent; and it is the Practice of Aurelians to take a Hen Moth, in a Box covered with Gauſe, to a Place near which 'tis likely there is a Brood, on Purpoſe to catch the Cocks, which, in a ſmall Space of Time, come flying about the Box, and are eaſily taken in your Net; this is called ſembling, of which I ſhall have occaſion to ſpeak more of, in its proper place.

She lays her Eggs on the Branches, covering them over with fine Hair or Down, as appears at *(a)*. I have given the Figure of the Hen Moth at *(f)* where ſhe is repreſented in Copulation with the Cock, whoſe upperſide is ſeen at *(d)* and the under at *(g)*. The Chryſalis of the Male Moth is ſeen at *(e)*. There are two Broods of the Scarce Vapourer in a Year. The firſt appears from the Eggs in Spring, becomes Full Fed the latter end of May, and produces their Moths about the middle of June; and the Caterpillars, proceeding from the Eggs of this Brood, are generally Full Fed about the latter End of Auguſt, or the beginning of September; and after laying in the Chryſalides about eighteen Days, the Moths appear. The Eggs of which continue during the Winter, and produce the aforementioned Spring Brood.

The laſt Hen Caterpillar of the Scarce Vapourer that I got, was beaten off the Sallow in Comb-Wood, the twenty-ſeventh of May 1760; on the thirty-firſt of the ſame Month it ſpun a pretty extenſive Web, wherein it changed to the Chryſalis, and the Moth was produced the ſeventh of June, lying the uſual Time for the Hens of both the Scarce and Common Vapourer to lay in Chryſalis. Now by reaſon of their ſcarcity, I thought it worth my while to ſemble it; to which End I took it out with me in a Box, and when I came to the appointed Place, which was the little Cut in Oak-of-Honour-Wood, I took it out of the Box, and pinned it up againſt a ſmall Tree, hanging by her own Web, and in leſs than five Minutes, two Cocks came flying down to her, one of which I took with my Fingers, and the other I ſuffered to join with the Hen; when they had been in Copulation ſome ſmall Time, I took them both as they was, and put them in the Box with the Web, to which they both ſeemed to cling very faſt; the next Morning I found them ſeparated, and the Hen had laid about three hundred Eggs.

The MOTTLED UMBER.

THE Eggs are laid in regular Order on the Branches of the Oak, Hazle, and Black-thorn, on which the Caterpillars feed, tho' they are found moſt plentiful on the Oak, and are taken by beating it, the latter End of May, when they are about full fed; they bury themſelves in the Earth, where they change to their Chryſalides. after they have each of them ſpun themſelves up in a thin Web, the Moths appear in October.

The Caterpillar is ſhewn at *(n)* full fed, and at *(o)* it appears in an odd Kind of Poſture, in which they are frequently ſeen, and ſo ſtupid and inſenſible are they at that Time, that I have found them in my Net when beaten from the Tree in that Poſition, and tho' I have handled them pretty roughly, they have ſtill retained that Poſture without Motion. The Chryſalis is ſeen at *(p)*; the Hen is ſhewn flying at *(q)*, diſplaying her upper Side; the upper Side of the Cock is ſeen at *(r)*.

The Caterpillars and Moths vary from each other in both Colour, Size, and Markings, altho' of the ſame Brood, and oftentimes ſo much, that none but thoſe who are well experienced would know them to be the Mottled Umber.

PLATE XV.

The YELLOW EGG PLUMB.

The YELLOW or WINTER TUSSOCK.

THE Caterpillar feeds on the Oak, and ſeveral Sorts of Fruit-Trees, on the Branches of which the Hen Moth lays her Eggs in Cluſters, about the latter End of May; the Caterpillars proceeding from theſe Eggs become Full Fed about the End of September, and are taken by beating; they change to their Chryſalides, each within a light Web as at *(g)*, and the Moths appear the Middle of May.

The Caterpillar, which produces the Cock Moth is ſhewn at *(a)*, he is ſomewhat leſs, and is more upon the Orange-Colour than that which produces the Hen; his Chryſalis is repreſented at *(b)*, and the Cock Moth which it produces is ſeen at *(c)*. The Caterpillar at *(d)*, is that which changes to ſuch a Chryſalis as is ſhewn at *(e)*, and produces the Hen Moth which is exactly deſcribed at *(f)*.

The GREY DAGGER.

THE Caterpillar of the Dagger is produced by a ſmall light green Egg, laid by the Female the Beginning of June. The Food of the Caterpillar is Willow, and moſt Sorts of Fruit-Trees and Shrubs, and are generally found in Gardens; they become Full Fed the latter End of Auguſt, or Beginning of September, and are then of the Size and Colour of that repreſented at *(b)*; they then ſpin a pretty ſtrong Web on the Surface of the Ground, or in the Holes and Cracks of the Barks of Trees, Walls, &c. where they change to Chryſalides of a reddiſh brown Colour, as ſhewn at *(i)*, and the Moths are produced the May following. There is no very diſtinguiſhing Difference between the Cock and Hen Moths; the Cock indeed is ſomewhat ſtronger marked, and not quite ſo large as the Hen, which I have ſhewn flying at *(k)*, and the Cock ſettled on a Leaf at (*l*).

To the Right Honourable
This Plate is humbly Dedicated, by her
Countess of Stamford
Ladyships, most Obedient & Faithful Serv.t
Moses Harris.

PL.XVI.

To the Right Honourable Lord Carysfort
This Plate is most humbly Dedicated by his Lordships most Obed.t & Obliged Serv.t
Moses Harris.

The ARGENT and SABLE.

THIS Moth which is eſteemed a Curioſity, is very ſcarce, nor has any Body been ſo lucky as to diſcover either the Caterpillar or Cryſalis, which is the more difficult as the Moth is ſeldom ſeen, all that I can inform the young Aurelian is, that they are always taken in Woods the Beginning of June. That in the Plate at (*m*) ſhewing its upper Side, was drawn from a very fine one, which was taken in Cain-Wood the ſixth of June. Another I took in Company with Mr. Drury, at Brentwood in Eſſex, the fourth of June 1760, which is the only one I ever ſaw flying.

They were once taken in Plenty by Richard Guy, Eſq; ſome few Years ago in a Wood that parts Winchmore-Hill and Southgate in Middleſex, the Beginning of the ſame Month, but I do not hear that they were ever taken in any Plenty before nor ſince. The under Side of this Moth is marked the ſame as the upper, for which Reaſon I thought it needleſs to give another Figure of it.

PLATE XVI.

The GLANVIL FRITILLARIA.

The LONG-LEAFED PLANTAIN.

THE Female Fly lays her Eggs on the Leaves of the Plantain, to which they are faſtened by a gummy Conſiſtence. Theſe Eggs are hatched in about fourteen Days, and the Caterpillars keep ſociably together the remaining Part of the Summer; during the Winter they cover themſelves over with a fine thin Web, which however the Rain is not able to deſtroy. At the Approach of the Spring, when the Sun gives a kindly Warmth, they come out of their Web, and ſeek their Food; each Night they retire to their Web, and lie altogether on the Top of it, for they ſeldom or ever get under it again after their firſt coming out. They are a very tender Creature, and never are ſeen to eat, nor ſcarcely move, butwhen the Sun ſhines upon them, and then they commonly feed all the while; but if the Sun ſhould chance to hide his Head by the Interpoſition of a Cloud, they preſently ceaſe. As the warm Weather approaches, and they increaſe in Size, they ſeparate themſelves, wandering in ſearch of their Food, which is the long-leaved Plantain, and ſuch as grow in or near Woods;

Woods; they are ſo remarkably timorous, that ſhould you ſtir the Plant they are on, tho' never ſo little, or even tread within two Feet of it, they inſtantly roll themſelves up in the Form of a Hedge-hog, as appears at (*b*), and fall to the Ground, where they lie in that curled-up Form, 'till they think the Danger paſt. They become full fed as ſhewn at (*a*) toward the latter End of April, when they hang themſelves up by the Tail, and change into the Chryſalis, as repreſented at (*c*), the Fly appears in fourteen Days after. The Male is repreſented flying at (*e*), and the Female at (*d*), ſhewing the upper Side of their Wings; the under Side of the Female is ſeen at (*f*), which differs very little from the under Side of the Male.

This Fly took its Name from the ingenious Lady Glanvil, whoſe Memory had like to have ſuffered for her Curioſity. Some Relations that was diſappointed by her Will, attempted to ſet it aſide by Acts of Lunacy, for they ſuggeſted that none but thoſe who were deprived of their Senſes, would go in Purſuit of Butterflies. Her Relations and Legatees ſubpœnaed Dr. Sloan and Mr. Ray to ſupport her Character. The laſt Gentleman went to Exeter, and on the Tryal ſatisfied the Judge and Jury of the Lady's laudable Inquiry into the wonderful Works of the Creation, and eſtabliſhed her Will. She not only made the Study of Inſects Part of her Amuſement, but was as curious in her Garden, and raiſed an Iris from the Seed, which is known to this Day, by Miſs Glanvil's Flaming Iris.

The SMALL TYGER.

THE Caterpillars of the Small Tyger, are produced by ſmall round ſhining Eggs of a light-green Colour, which the Parent Moth fixes to the Food, about the latter End of June, in beautiful and regular Order, as appears at (*l*). The Caterpillars ſeparate as ſoon as they appear from the Egg, ranging in ſearch of Food, which is chiefly Chickweed and Nettles, tho' like others of this Claſs, almoſt any Herb is welcome to their devouring Chops. They remain in the Caterpillar State during the Winter, and appear again very early in the Spring.

About the latter End of April or Beginning of May, they may be taken full Fed as deſcribed at (*g*), and are to be found in ſuch Places as I have already directed for the ſearch of the Cream-ſpotted Tyger, which are to be taken full fed at the ſame Time. When the Caterpillar is fit for its Change, it ſpins itſelf up in a Grey Web, as ſeen at (*m*), wherein it changes to a black Chryſalis, covered with a Pearl-coloured Bloom, which I have ſhewn at (*b*), as taken out of its Web. The Moth appears in twenty-one Days. I have ſhewn the Female flying at (*l*), and the Male at (*k*). They may eaſily

PL. XVII.

To Lady Carysfort This Plate is
most Humbly Dedicated by her Ladyship's most Obliged & Obed.t Humble Servant.
MANUS HAEC INIMICA TYRANNIS Moses Harris

eaſily be diſtinguiſhed one from the other; the Body of the Hen is of a bright-red, while that of the Cock is of the Colour of Yellow Oker. They likewiſe differ in the Horns and Markings of their Wings, which is more eaſily deſcribed in the plate.

They always fly in Woods, for which Reaſon it has by ſome been called the Wood Tyger; their Time of Flight is generally after Noon about Three or Four o'Clock; they fly very ſwift, and commonly ſettle on the Ground among the Graſs; if you intend to take them, you are carefully to obſerve the Place where they ſettle; then run as faſt as you can, and cover them with your Net, for they are very timorous, and ſoon apprized of Danger, and ſhould you approach ſlowly, they would have Time to diſengage themſelves from the Graſs, in which their ſudden Alarm cauſed by your ſwift Motion, but the more confuſes and intangles them.

PLATE XVII.

The LACKEY.

The Common Province Roſe. *Roſa Provincialis rubra.* PARK.

THE Food of this Caterpillar is Blackthorn, Whitethorn, Brier, and almoſt all Sorts of Fruit Trees. The Female lays her Eggs toward the latter End of July, placing them round a Twig in beautiful Spiral Order, as ſeen at (*a*). In this State they remain during the Winter, and produce their Caterpillars in the Spring following; when they proceed from the Egg, they ſpin themſelves up together in a Web, in which they generally hide in the Night, and come forth in the Day to feed. They ſeem very fond of lying cloſe together on the Top of the Web, the Sun ſhining full upon them, and I have obſerved them at this Time to have an odd Sort of Motion with their Heads, which they move at the ſame Inſtant of Time together, as if one Soul had animated their little Bodies. When they arrive in their laſt Skin, they are about two Inches long, and the Stripes of different Colours down their Backs, very much reſemble Livery Lace, from which they are called the Lackey; when full fed as at (*a*) they ſtray from each other, to find a Place proper for their Change, which hap-

happens about the Middle of June, each Caterpillar then ſpins himſelf up in a double Caſe, as ſeen at (*c*). The out-ſide Caſe or Web is not ſo ſtrong, nor the Silk ſo cloſe ſpun together as the inner one, which appears thro' the other in the Form of an Egg; when he has compleated his Web, he works a fine Powder thro' the inner Caſe, which has very much the Appearance of Flower of Brimſtone; ſoon after this he changes to the Chryſalis which is deſcribed at (*d*), as taken out of the Web; the Moth appears in about thirty Days after.

I have ſhewn the Female flying at (*e*), diſplaying the upper Side of her Wings, ſhe is paler than the Cock, which is of a deep Brown, or Fox Colour, as deſcribed in the Plate at (*f*).

The CREAM DOTT-STRIPE.

THE Eggs of this Moth are of a light green Colour and ſhining, which are fixed by the Hen on the Food, and moſtly on the under Side of the Leaf in pretty regular Order, as appears at (*g*). The Caterpillars when firſt hatched are almoſt white and hairy, but at the ſhifting of every Skin, they grow darker; there is very few Herbs they will not eat. They are particularly fond of Jeruſalem Artichokes, and all Sorts of Plants of the Sallad Kind. They become full fed as deſcribed at (*h*), about the Middle of Auguſt. They then ſpin themſelves up in a light Web on the Ground, or in ſome Hole or Crannie of the Wall, where they change to a black Chryſalis, as ſeen at (*i*), and the Moths appear in the Spring following, about the Middle of May; they are very commonly ſeen about this Time, ſitting againſt Walls, Pales, Houſes, &c.

The Hen is ſhewn ſitting on a Leaf at (*k*), and the Cock in a flying Poſition at (*l*), he differs from the Hen in the Broadneſs of his Horns, is of a deeper Colour, and has a greater Number of black Spots on his Wings.

PL. XVIII.

To the Honourable Tho.ˢ Townshend.

This Plate is most humbly Dedicated by His Obliged & Obedient Servant

Moses Harris.

The ROSE MAY-CHAFFER.

THE Worm or Caterpillar which produceth this Beetle, feeds under-ground, moſt commonly at the Roots of Trees, and never appears upon the Surface, unleſs diſturbed by digging, or ſome other accident, which is the Reaſon why they are ſo little known. They are very prejudicial to Gardeners, by deſtroying the Roots of Plants and Flowering Shrubs, on which they delight to feed. The Hen Chaffer lays her Eggs about the middle of June, for which Purpoſe ſhe buries herſelf in the Ground where it is ſoft and light enough to admit her; where making a proper Receptacle, or hollow Chamber, ſhe diſburthens herſelf of her Eggs; ſhe then returns to the Surface, and flies away, to enjoy the remainder of her Days, which generally find a Period in leſs than two Months after. The young Caterpillars proceed from the Eggs in about fourteen Days, and go in ſearch of Food, which is not far from them; for the provident Mother always takes care to place her Eggs where the young Brood may have a ſupply as ſoon as they proceed from the Shells; when they have gathered Strength, they begin to Burrow different ways in ſearch for Roots; in Winter they eat but very little, if any thing, and retire pretty deep in the Ground, to avoid being bound up by the Froſt. They ſhift a Skin every Year, and become full fed about the fourth Year, at which time they appear of a Cream Colour, their Head and Feet brown, as appears at (*a*). About March the Caterpillar makes a Caſe of Earth very near the Surface, which Caſe is about the Size of a midling Walnut; within this he changes to the Chryſalis or Nympha, as is ſhewn at (*b*), in which he continues till the beginning of May, and then produces a Chaffer in the likeneſs of its Parent. When they firſt come from the Chryſalis, they are of a light greeniſh Colour, and tender, and are many Days before they come to their proper Hardneſs and Colour; their Food is various, ſometimes they are found eating the Leaves of Plants, and often feeding within the Heart of the Roſe; they are very fond of any thing that is moiſt; I took one once ſucking the Juice that flow'd from the Bark of a Willow Tree. The Hen is of a beautiful deep green Colour, as appears at (*o*) and (*p*), which laſt I have ſhewn flying, to diſplay the tranſparent wings. The Cock appears of the Colour of burniſhed Copper, when it is a little tarniſh'd, tho' in ſome poſitions it hath a greeniſh Caſt; I have deſcribed him folding up his Wings at (*q*).

PLATE XVIII.

The PEPPER'D.

The ſmooth leaved Elm. *Ulmus folio Glabro.* GER. Fm.

ELM, Lime, and Oak, is the Food of the Catterpillar which produces this Moth. The Hen lays her Eggs on the Food, about the middle of June, which ſtick faſt where they are laid. When the young Caterpillars appear from the Eggs, they ſtray from each other in ſearch of Food. They become full fed the beginning of September,

ber, when they appear of ſeveral different Colours, ſome being almoſt black, as is ſhewn at (*a*), others appear of a very light Olave, like that at (*b*) ſometimes they have little riſings or protuberances in ſeveral Parts; when full fed they come down the Tree and burrow into the Ground about four or five Inches deep, where they change to black ſhining Chryſalides, having a ſharp Point at the Tail, as ſhewn at (*c*), which is the largeſt Chryſalis, and produces the Hen Moth; and that at (*d*) the Cock. They remain in Chryſalis during the Winter, and the Moths appear the latter end of May. The Hen is ſhewn flying at (*e*), and the Cock in a ſetting Poſition at (*f*). The Catterpillar is taken by beating the Trees, and the Chryſalis by digging at the Roots of Trees in the Month of April, with a Trowel. The Moths are ſometimes found ſitting againſt the Bark.

The RED UNDERWING.

THE Caterpillar which produces this Moth is ſeldom ſeen, which is owing to the Method he takes to ſecure himſelf, for he never ventures to the Ends of the Branches, but carefully keeps on the larger Arms near the Body or Bole of the Tree, from which place he can never be ſhaken by our method of beating. In bad and windy weather he comes down to the body of the Tree where he hides himſelf in the Cracks or Furrows of the rough Bark; ſo that by the flatneſs of his Make, and his Colour being ſo much like that of the Bark, he eludes the ſearch of our Eyes. They generally become full fed the beginning of July, when they appear as at (*g*), of a light olave Colour, having eight middle Legs, two holders behind, and ſix crooked Claws near the Head. It now wanders about the Bark to find a Hole or Crack wherein he may be concealed during the Time of his being in the Chryſalis State; but the Place they moſt approve of is under the Bark, or between that and the Tree, where they change within a tender Web. The Moth appears in twenty one Days after. I have ſhewn the Chryſalis as taken out of the Web at *(i)*, which is covered with a fine Bloom; the Moth is ſhewn at *(k)* flying, to diſplay the upper Side of his Wings, at *(l)* to diſcover his underſide, and at *(m)* in the Poſition in which he ſits againſt the Body of the Willow Tree, where they are often found. They fly in an Evening, and ſometimes in the Day-time, if the Weather prove hot.

To His Grace Cha.^s Lenox Duke of Richmond,

This Plate is humbly Dedicated by his Grace's most Obliged & Obed.^t Hum.^le Serv.^t

Moses Harris.

PLATE XIX.

The LIME SPECK.

The African Marygold.

THE Hen Lime Speck lays her Eggs about the Beginning of July, on the underſide the green Leaf of the African Marygold; they are exceeding ſmall, of a light green Colour, and placed in order like thoſe of the Tiger Tribe. In this ſtate they remain about a Fortnight, and then produce a ſmall green luper Caterpillar, which feeds on the green Leaves, yet appears to be particularly fond of the Flower; under which they conceal themſelves while they feed on its leaves. They become full-fed towards the latter End of Auguſt, and are then about an Inch in length, they are of a fine green Colour, and variouſly ſpotted, as is ſhewn at *(a)* and *(b)*; others appear only of a dark green, having no Spots or Markings as ſeen at *(c)*. When ready for their Change they retire down the Plant to the Earth, in the Holes or Cranies of which they ſpin a Caſe, or rather Web, wherein about two Days after they change to their Chryſalides: The Colour of the Tail of which is brown, and that part which contains the Wings of a fine green. They remain during the Winter in the Aurelia or Chryſalis ſtate, and produce their Moths the latter End of June following. The Hen is ſhewn flying at *(d)* diſplaying her upperſide, and the Cock as ſettled on the Box at *(f)*. They fly in an Evening in Gardens.

The CRIMSON UNDERWING.

OF all the Caterpillars which are attained by beating, perhaps none is acquired with ſo much Trouble and Fatigue as the Caterpillar of the Crimson Underwing, and their great Scarcity added to their Beauty makes them be held in great Eſteem among the Aurelians. This beautiful Inſect feeds on vaſt and high timber Oaks, whoſe Arms and Branches extend a long way from their Bodies, and never on the lower and younger Trees. For this Service your Sheet ſhould at leaſt be ſeven Yards long, and five broad, your Prowler likewiſe proportionable, which muſt be near ſixteen or eighteen Feet long to reach even the lower Branches of ſuch Trees on which theſe Caterpillars feed. Your Box, or rather Cage, muſt have convenient Places in the ſide cover'd with Gauſe or Crape to admit of Air, that the Caterpillars may not be over heated; in the bottom of the Cage a Bottle ſhould be fixed full of Water with a Sprig of Oak in it, the Stalk of which ſhould fit the Mouth of the Bottle very nicely, that the Caterpillars may not get in and drown themſelves, which they will do if they can

get

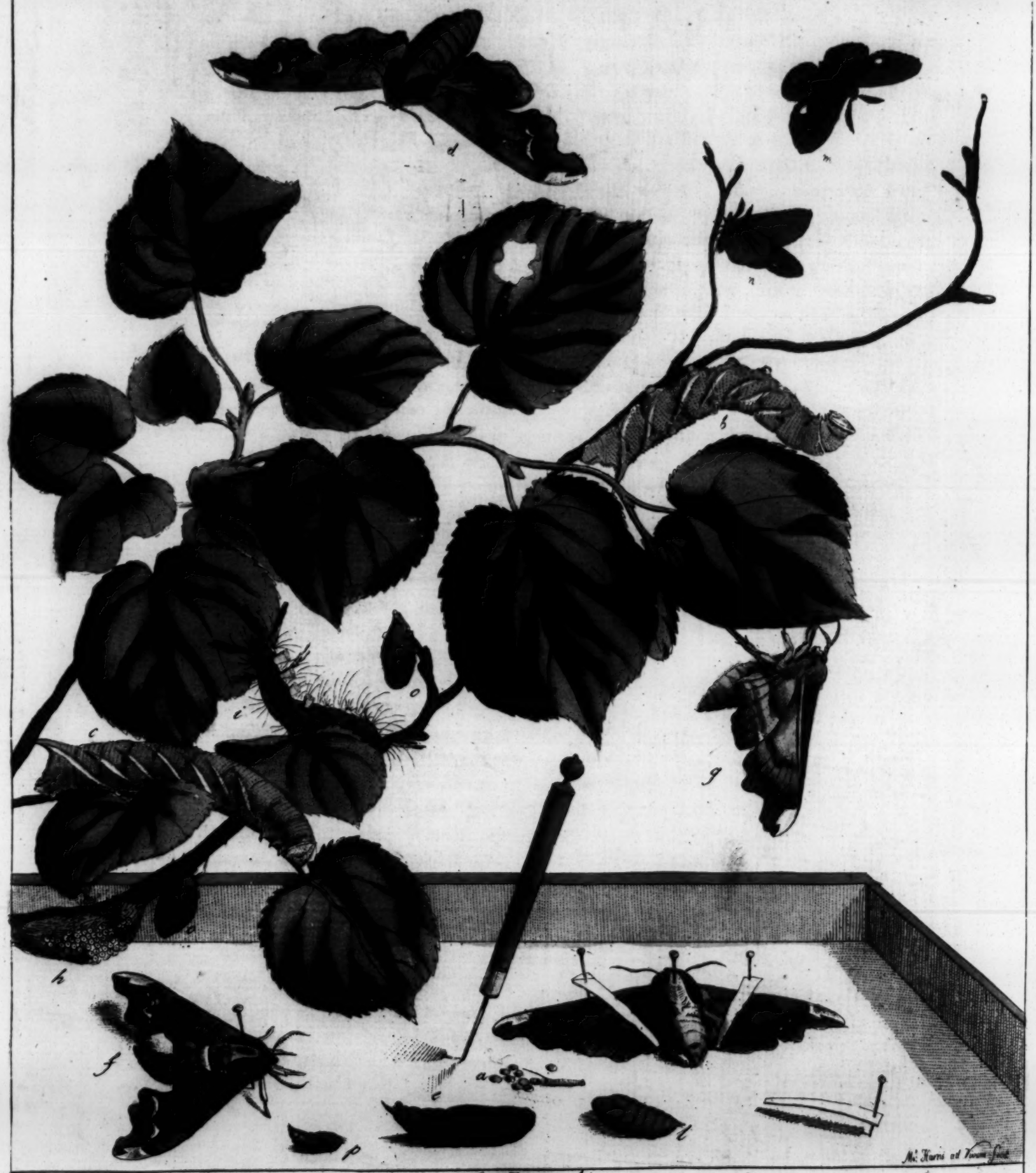
get at the Water; a ſpare Box or two ſhould always be taken in your Pocket, one for Flies or Moths, and others for Caterpillars, which you may beat or chance to find on other Growths: The Caterpillar Boxes for the Pocket ſhould have an oblong Hole in the Lid, and ſuch a thin Braſs ſliding Cover as is ſeen in the Plate. The Time of beating for them is the latter End of May, or from the twenty-fifth of that Month to the ſixth of June, when they are full fed, and appear like that at *(g)* which is a juſt Repreſentation of the Caterpillar. It is about three Inches long, and thick in Proportion, having ſeveral Lumps, or Protuberances on the Back, out of which ſpring ſeveral ſmall Hairs; they are variouſly mottled or chequered with a Variety of Shades, the Sides, near the Belly which is flat, are ſurred, or rather fringed, with ſhort downy Hair. It is of ſo odd a Colour, that, if you are not very careful when you are beating for them, you will be deceived when they are in the Sheet, and throw them away together with ſmall Bits of broken dead Twigs; for thoſe trees are generally covered with a rugged greyiſh Moſs, not unlike the Caterpillar, even when viewed pretty nearly.

When about to change they ſearch for ſome convenient Hollow, or Cavity, in the Bark, or hide themſelves among the Moſs, with which the Arms and Branches of ſuch old Trees greatly abound; here they ſpin a brown Web of a middling Strength, wherein after a few Days they change to the Aurelia or Chryſalis State, which I have deſcribed lying on the Box at *(b)*; they are of a deep red brown Colour, having that part which contains the Wings covered with a Bloom, which moves or comes off when touched; they remain in the Chryſalis State about three Weeks, ſo that the Moths appear the beginning of July,

There is a very great Reſemblance between this Moth and the RED UNDERWING; their Chryſalides are alſo formed alike, and both covered with Bloom; the Caterpillars are both flat on the Belly with a round black Spot on each of the ſix middle Joints, and the Caterpillar of the CRIMSON UNDERWING hath much of that grey, or light Olave Colour, which covers the Caterpillar of the RED UNDERWING. I have ſhewn the Moth flying in three different Appearances, viz, at *(i)* *(k)* and *(l)*, that a better Idea may be had of the upper and underſide of this beautiful Inſect. With reſpect to the Eggs they are no doubt laid on the Food; but when hatched, or in what State this Inſect lies during the Winter, is what I cannot aſſert as a known Fact; but as it is obſerved, that all Moths, hitherto known, copulate and lay their Eggs ſoon after their Appearance from the Chryſalis, and this Moth being produced in the middle of the Summer, it is not doubted, I preſume, but the Eggs are hatched the ſame Summer in which they are laid, and conſequently live through the Winter in the Caterpillar State.

PLATE

PL. XX.



Mr. Harris ad Vivum fecit.

To Her Grace the Dutchess of Richmond.

This Plate is humbly Dedicated by her Grace's most Obliged & Obed.t Humb.le Servt.

Moses Harris.

PLATE XX.

The LIME HAWK, or OLAVE SHADES.

The LIME TREE. Tellia.

THE Caterpillar, which produces this Moth, feeds on Elm and Lime Trees, and are generally taken by beating in the month of Auguſt, at which time they are full-fed, and begin to go into the earth. I am of an opinion that Lime and Elm are not the only Trees they feed on, for I lately found one in a lane in which neither of thoſe Trees grow, at leaſt within ſeveral hundred Yards of the Place where I found the Caterpillar, neither can I now remember what I found it on, but Lime is ſuppoſed to be the Food it moſt delights in, and thoſe Caterpillars produce the beſt Moths that are fed therewith. The eggs are laid by the Hen and fixed to the Food about the beginning of June, and are hatched the latter end of that Month; they are of a light ſhining green Colour, and a little flatted, as appears at (*a*) particularly on the under-ſide. The young Caterpillars are remarkably long, their little tail's near the ſame length as their bodies, and ends in a long ſharp point as fine as a hair, which appears as if dry and withered, nor do I believe they have any ſenſe of feeling from half way to the point, for every time they ſhift a Skin the Tail appears ſhorter in proportion to the Body. They throw off five Skins during the time of their Caterpillar-ſtate, one every ſeven Days, and arrive at their full Size the fortieth Day, or the middle of Auguſt, they now retire down the Tree to the Ground, wherein they bury themſelves about four or five Inches deep: I never could perceive they ſpun any Web to form the Cell wherein they change; but I am certain the greateſt part of the Caterpillars which go in the Ground do. I was in the ſame doubt concerning the PRIVET, but on taking one carefully out of the Mould I diſcovered a fine thin Web, not unlike in Texture to the Web which a ſmall Sort of Spider ſpins in the Corners of Rooms; and as the LIME HAWK is of the ſame Claſs with the PRIVET, I do not doubt but they likewiſe ſpin a Web, though perhaps ſo fine, that, on raiſing the Earth to come at the Chryſalis, it may very probably through its tenderneſs be deſtroyed. The Caterpillar lies in the Earth ſeveral Days before it puts on the form of the Chryſalis, during which time it ſhortens and grows thicker, particularly about the ſhoulder part, behind which at length it burſts the Skin, and the Chryſalis gradually appears as the Skin is driven off to the Tail by a particular Motion of the Caterpillar. The Chryſalis remains during the Winter, and the Moth appears the latter end of May, though ſometimes not till the beginning of June.

Some of theſe Caterpillars are of a very different colour, and greatly vary from the others in reſpect to the Markings, ſome are of a light blue green, with ſeven oblique feint yellow Streaks on the Side as ſeen at (*c*); others are of a fine beautiful yellow green, and the Streaks on their Sides yellowiſh, adjoining to each of which, toward the back, appears a fine Carmine or Crimſon Spot, and the ſame, though not ſo ſtrong at

at the bottom of each Mark toward the belly as is ſhewn at (*b*). The Chryſalis deſcribed at (*e*) produces the Cock: the Hen Chryſalis only appears a little thicker.

I have deſcribed the Moth in four different Places in the Plate, the uppermoſt of which at (*d*) is a Hen ſhewing the upper ſide; the underſide is ſeen at (*g*) where it is ſhewn hanging in the manner which all Moths and Butterflies do, when they come from the Chryſalis, to expand and dry their Wings. The Cock is ſhewn at (*f*) as pinned down to the Setting Board, with his Wing in their reſting Poſition. The other Moth on the Setting Board, is a Hen with her Wings expanded; which figure is only to ſhew the Manner in which the Card Braces is fixed, in order to the ſetting a Fly or Moth, which braces together with the Setting Board and Point, is fully deſcribed in the Introduction.

The COMMON VAPOURER, or the LIMETREE TUSSOCK.

THE Caterpillars are ſo common, that they may be found in almoſt any Garden in Town, for they will feed on many of the Plants that are generally uſed to decorate Gardens, as Sunflowers, Marigolds, &c. Thoſe that are found wild, I mean in the Fields, feed on Oak, Elm, Blackthorn, Hazle, &c. But the Lime-tree is their favourite Food. There are two Broods a Year; the one changes into Chryſalis the latter end of May, or beginning of June, within a brown Spinning, and produce their Moths about the middle of June. The Caterpillars, proceeding from this Brood, which are full fed the latter end of Auguſt, change to their Chryſalides, and appear in the Moth State the end of September; theſe lay their Eggs on their Web, which continue in that State during the Winter, are hatched in the Spring, and arrive to the Moth State about the middle of June as above: In ſhort, the whole Hiſtory of this Moth entirely correſponds with the SCARCE VAPOURER: The Hens of both Species are without Wings: They have each two Broods in the Year; and the Hens appear from the Chryſalis in a Week, while the Cock remains ſixteen or eighteen Days: They are taken by Sembling, otherways not eaſily caught.

The Caterpillar full-fed is ſhewn in the Plate at (*i*). The Web, or Spinning, of the Female is deſcribed at (*b*) with the Eggs thereon, which appear perforated like the ſmall Beads of a Necklace. The Chryſalis of the Hen is ſeen at (*l*) which is of a light Green or Olive Colour, and that of the Cock at (*p*) which is black and ſhining. They fly in the Day time in Town, hovering about Lime Trees in ſearch after the Female.

Mo.s Harris ad Viv

To Sir Nathaniel Curzon Bar.t This Plate is most humbly Dedicated.
by His most Obliged and Humble Servant. *Moses Harris.*

PLATE XXI.

The UNICORN.

Small Bindweed. *Convolvulus minor Vulgalis.* PARK. 171.

I Have taken a great deal of Pains to come at the Hiſtory of this ſcarce and valuable Inſect; for altho' many have been taken in the Moth ſtate, yet the Manner and Places in which they were found, gave not the leaſt Light how more were to be obtain'd. For this Reaſon I greatly deſpair of giving a ſatisfactory Account, but being will acquainted with the Claſs to which this Inſect belongs, and by comparing the Accounts given me by my Friends, I am enabled to ſatisfy the Curious in the ſeveral Particulars.

The laſt Two were taken the latter End of September, 1760, in the Duſk of the Evening, by Mr. PETER COLLINSON, at his Country Houſe, at MILL HILL in the Pariſh of HENDON in MIDDLESEX, one of which was caught in the Green Houſe, and the other about half an hour afterwards, as it was beating againſt the Outſide of the Windows, endeavouring to get at the lighted Candles. As to the Caterpillars I never heard but of two that were ever found; one by Mr. SOUTH of HAMPSHIRE, which he ſaid was green, and appeared in other Reſpects ſo like the Privet that he was deceived: He fed it on the Leaves of the leſſer Bindweed: It changed into the Chryſalis in the Earth in July; and the Moth was produced in September; this proved a Hen, and is now, together with a fine Cock, in the curious Cabinet of JAMES LEMON, Eſq; from which Moths thoſe in the Plate were drawn. The Caterpillar in the Plate at (*a*) is of the Brown ſort, and copied from Marian, which is the ſame with Mr. ROSEL's; and, exactly agrees with the Deſcription given me by a Gentleman of my Acquaintance, who tells me it was found in the Ground, about the Middle of the Summer; but it being in the Poſſeſſion of another Perſon, he could not inform me what became of it after. By the above Accounts we learn there are two Sorts of Caterpillars; the brown, and the green; the laſt of which (according to that taken by Mr. SOUTH) produces the Hen-Moth. Mr. ROSEL, tho' he has given good Draughts of both Sorts in his ingenious Work, is ſilent in this Particular. I do not queſtion but this Inſect is as plentifully produced in England as any of its Claſs; but their Manner of Hiding and Burying themſelves in the Ground makes them Difficult to find; nor do they ever come up or appear on the Surface but to feed, which is in the Evening, ſometime after the Setting of the Sun; and there is great Reaſon for their ſo doing; for as their Food runs along upon the Ground, (unleſs it meets with ſome Plant or Shrub in its way, and then indeed it aſcends by twiſting round it) and moſtly on riſing Places, which fronts the Mid-day Sun; the Earth, more eſpecially at that Time of the Year, would be too hot for the Creature to exiſt; it would likewiſe be ſo much expoſed to the Ichneumon, as this Plant affords but little Shade, that the whole Species would in Time be in danger of being Extinct; which is what Providence never admits of in any of the moſt trifling of her Works: This, I ſay, is another Reaſon why they ſhould conceal themſelves in the Day time; for Nature has Indued them with ſufficient Inſtinct, by which they are ſenſible of an Enemy, and their

manner

Manner of attacking them which would be intire Uſeleſs, without it further Inſtructed them, either in a Way of Defence, or a proper Method of Securing themſelves.

About the Middle of July, the Caterpillar arrives to its full Size, and Makes a convenient Receptacle in the Earth; wherein, after a few Days, it changes to the Chryſalis: In this State it continues about two Months; ſo that the Moth appears about the Middle, or toward the latter End of September: The Hen lays her Eggs on the Stalks of the Food, to which they are fixed like others of this Claſs; and in the Evening ſhe betakes herſelf to her beloved Diverſions. The Eggs are hatched in a few Days, and the young Caterpillars, when arrived to about their third Skin, retire into the Earth for the Winter. In the Spring they feed again, and become full fed in July as above.

The Method in ſeeking this Caterpillar, is, by the Dung, or Excrement, which is like that of the Privet, and muſt be carefully ſought for under the Plant. Having found this, mark the Place, and return at Night with a Candle and Lanthorn to ſeek the Caterpillar; but I rather think there is a greater Likelihood of Succeſs in ſeeking the Moth, which muſt be towards the latter End of September. The Method I propoſe, is to go with a Candle and Lanthorn, in the Duſk of the Evening, to ſome Place where the Food grows in plenty; there fix your Lanthorn, and attend it with your Nets, which you muſt take with you; together with Boxes, Pins, &c. If there is any Moths within ſeveral hundred yards of the Place, they will come and beat againſt the Lanthorn: And if you ſhould not happen to prove Succeſsful in the Unicorn, you would ſtill find other Sport to Recompenſe you for your Diſappointment.

The Caterpillar is deſcribed in the Plate, full fed, at (*a*) the Chryſalis, lying on the Ground, at (*b*) the Hen-Moth, at (*c*) and the Cock, at *(d)* with his Probocis extended; which meaſures in the Original Moth three Inches and a Quarter.

THE LITTLE GATE-KEEPER.

The firſt Appearance of this Fly, is toward the latter End of April, and from that Time to the approach of Winter, is the conſtant Inhabitant of the Meadows. They have three Broods a Year; the Firſt in April, the Second in June, and the Third in Auguſt; toward the latter End of theſe Months they are always to be found freſh and in good Condition. The Caterpillars feed on common Meadow-Graſs, on which the Female Fly faſtneth her Eggs; theſe are very Small as may be ſeen near the Caterpillar in the Plate, at (*e*). They are Hatched in about ſix-Days, and the Caterpillars, when arrived to about their third Skin, conceal themſelves in holes under pieces of Dirt. &c. during the Winter Seaſon. In the Spring they feed again, and arrive to be full fed the Beginning of April; they then faſten themſelves up by the Tail, in Order for their change to the Chryſalis, which is almoſt White, as at *(f)* till the incloſed Fly is in Perfection, and then Appears to change a little upon the Orange or Lightiſh brown, which Increaſes ſtill deeper till the Fly breaks its Priſon and appears: This we call the Firſt, or April Brood, from which proceeds two others, which appear in the Fly as abovementioned. There is very little Diſtinction between Male and Female; except the Latter being a little Larger, and the Ring or Eye at the Tip of the Wing more Strong and Conſpicuous. The Upper ſide of the Fly is ſeen at (*g*) and the Under at (*h*) where it is repreſented ſitting on the Graſs with its Wings ſhut. They Fly very low in Meadows, Settling on the Tops of the Graſs.

PL.XXII

To the Hon.ble Will.m Rich.d Chetwynd.— This Plate is
Most Humbly Dedicated by His most Oblig.d & Obed.t Serv.t
Mo.s Harris

PLATE XXII.

The BURNISHED BRASS.

Archangle. *Lamium.*

THE Caterpillar of this Moth feeds on the Archangle, Nettle, and many other Plants; but Archangle is allowed to be its moſt favourite Food. The Hen Moth lays her Eggs, which are green and ſhining, on the Food, which are hatched in a few Days: The young Caterpillars feed the remaining Part of the Summer, and conceal themſelves in Places of Retreat during the Winter. In Spring they feed again, and arrive to be full fed towards the Middle of July, as is ſeen at (*a*). They now ſpin themſelves up in a coarſe browniſh Web, in any convenient Place; but moſt commonly on the Food, wherein they change to a black gloſſy Chryſalis, as appears at (*b*). In this State they remain about three Weeks, ſo that the Moths appear the beginning of Auguſt: The Moth is deſcribed at (*e*): They are ſeldom taken in the Moth State.

THE DARK GOTHIC.

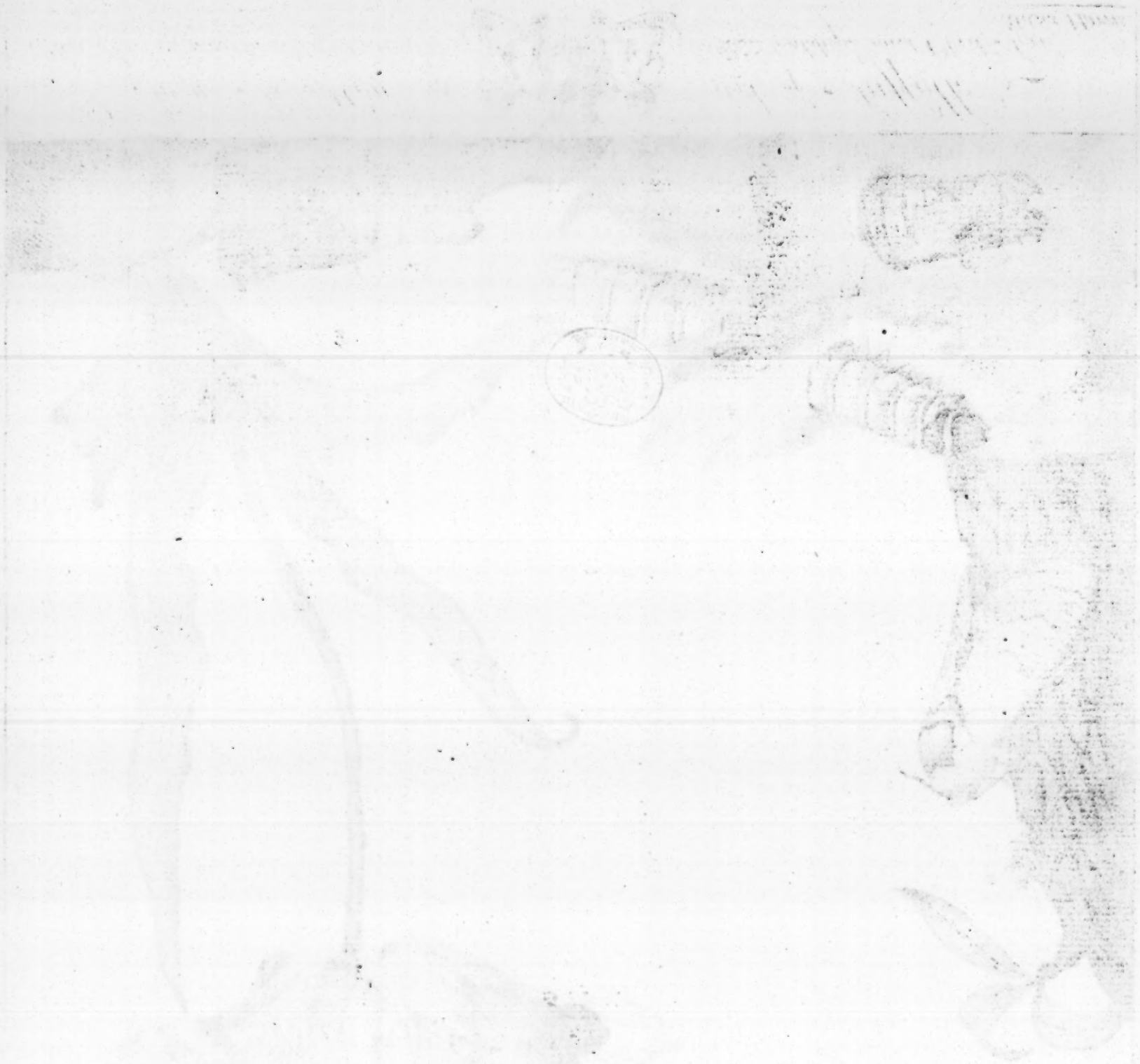
THIS Moth appears from the Chryſalis the latter End of June, at which Time they couple, and lay their Eggs. The young Caterpillars feed but ſlowly: The remaining Part of the Summer, and during the Winter, conceal or bury themſelves in the Ground, under, or as near as they can, to the Roots of their Food; which is Water Betony, Dock, Archangle, Nettles, &c. Very early in the Spring they come forth again to feed, and become full fed, as at *(d)* about the beginning of May: They then ſpin themſelves up in a Web on the Surface of the Earth, and change into brown ſhining Chryſalides; in which State they continue one Month, and then the Moths appear. The Chryſalis is ſeen at *(e)*: The upper Side of the Moth is ſhewn at *(f)* and at (*g*). The Moth is ſeen flying in ſuch a Poſition, as diſcovers the under Side. This Figure of the Moth may ſeem unnatural, but it is a Poſition in which moſt Moths turn themſelves when going to ſettle on the under Side of a Leaf, Board, &c. They fly by Night, and are very ſeldom taken. The Caterpillars are found the beginning of April, by ſearching at the bottom of the Stalks of their Food, and ſuch of their Food as grow againſt the Sides of Banks; for though they ſeldom or ever get on the Leaves, nor crawl high on the Stalk, yet ſometimes, by ſtriking the Food, they will drop off, and roll down the Bank to the Ground.

THE COMMON EVENING SWIFT.

THIS Moth is generally taken flying in an Evening in Meadows: They fly low and very ſwift; which is the Reaſon they were called by this Name. The Hen caſts her Eggs from her as ſhe flies, in great Numbers at once, which are ſmall and black, appearing like fine Gunpowder: Theſe drop into the Graſs, and reſt at length in little Holes, or Crannies of the Ground; where, after continuing a few Days, they are hatched. The young Caterpillars immediately begin to feed as near the Root as they can; and, after a little Time, being grown larger and ſtronger, they eat their Way to the very Roots, perhaps four or five Inches deep, where they make long and winding Paſſages among the Roots; and from one Knot of Roots to another: theſe Paſſages are all carefully lined with their Web, to hinder the Dirt from falling in, and interrupting their Way. In this Manner they feed and live during the Winter Seaſon, ſeldom or ever coming out of the Ground, any farther than is ſeen at (*b*) (*b*), and even then, at the moving of a Bit of Graſs, or the blowing of the Wind, they will ſuddenly draw in their Heads, and run into their Holes a great Way backwards. They become full fed the latter End of April, or beginning of May, and appear as at (*i*), of a Cream Colour, and their Heads red: They then come nearer, or within an Inch of the Entrance of one of their Paſſages, where they incloſe themſelves in a ſlight Web, and change into Chryſalides, which is of a crooked or bending Form, as at (*k*). They continue in this State till towards the End of May, when the Moths appear. The Hen is ſeen flying at (*l*), and the Cock at (*m*): The latter appears generally more upon the Orange Colour than the Hen, and the Wings more tranſparent, as if the Feathers were rubbed off: But it is not very eaſy to diſcover the Cock from the Hen; ſo much do they differ, both in Size, Colour, and Markings.

THE COMMON LADY BEETLE.

ON the 29th of May, 1759, I found on an Oak Leaf, a Cluſter of pretty large Eggs, conſiſting of twenty-four, of a very light green Colour, and appeared as at (*n*). I carefully brought them home, and, on examining them with my Glaſs, diſcovered them to be of an oval Form, not growing taper towards the Ends, but rather ſhaped like a Barrel or a Caſk: I placed them on ſome Food, reſolving to examine them every Day, expecting they would produce ſome ſtrange Sort of Caterpillar, not remembring ever to have ſeen Eggs of that Shape before. However, I ſaw no Alteration in them till the 10th of June, and then there appeared on each Egg, pretty near the top, a black Mark of a triangular Figure, which was divided by another Mark, reaching from the upper Side to the lower Point or Angle, as may be ſeen at (*p*); where one of the Eggs is ſhown as ſeen through a good Magnifier: Thus they remained till the 13th, and then I perceived the Eggs to be changed to a lightiſh brown, or Wainſcot Colour; and two additional Marks appeared a little above the Triangle: Theſe were of a fine bright Crimſon Colour; and now I expected the Caterpillars to appear very ſoon; and accordingly next Morning found them crawling about the Box: They appeared very dark, or rather black, having no Belly-Legs, nor Holders, by which I knew them to be of the Beetle Kind. About the latter End of July, they appeared as I have repreſented them at (*o*) (*o*) full fed; when they faſtened themſelves up by the Tail, and



PL. XXIII

To the Rt. Hon.ble the Earl of Suffolk,

This Plate is most humbly Dedicated by his Lordship's most Obed.t Servt.

Moses Harris.

and changed into Chryſalides, as ſeen at (*q*) and (*r*), which laſt is ſeen in a Profile poſition. This Chryſalis when diſturbed raiſes itſelf almoſt erect on its Tail, with a quick and ſudden motion, as ſhewn by the dotted line near the Chryſalis at (*r*). They lie in the ſtate ſeven Days, and then produce ſmall Beetles, commonly called Lady-birds: the Caterpillar will feed on almoſt any Plant, and they lie during the Winter in their Beetle ſtate.

PLATE XXIV.

The GOAT MOTH.

The Willow-Tree. *Salix.*

THE Hen Moth lays her Eggs on the Bark of the Tree, in a confuſed Heap, about the beginning of June, theſe are of a Dirty Brown Colour, and appear of an irregular form, as ſeen at (*a*), they are Hatched in a few Days, perhaps ten or fourteen, and the young Caterpillars immediately divide and begin to feed on the Bark of the Tree, getting for the firſt Year (for they are three Years in the Caterpillar ſtate,) no farther into the Tree than under the Bark; the ſecond Year they get into the Woody and more ſubſtantial Part, eating through the very Heart of the Tree, from the Top to the Bottom of the Body or Bole, and it is very common to ſee the Trees on which they feed, or where there is a Brood, killed by this devouring Inſect; by deſtroying ſo much of the Wood and Bark, as in Time fairly obſtructs the motion of the Sap and Juices. In ſome places, particularly in Cornwall, they are called the Auger Worm; and indeed the holes they make appear as if bored with an Auger and ſo large as to admit a Man's Thumb. The third Year they arrive to be full fed, and then appear about five Inches in length, and, in my opinion, very diſagreeable to the eye, appearing like a large Maggot of a pale and ſickly Clay Colour: the Back is of Deep Purple-Brown, the Head is Black and Shining, behind which on the firſt Joint it hath a Spot of a remarkable ſhape, which is gloſſy and ſeems of a hard ſubſtance: from the Sides appear a few tender hairs. Such a Caterpillar as I have now deſcribed is ſeen in the Plate. But many of them, eſpecially the young ones, are much paler. When they are ready for their transformation which happens about the beginning of April, they come within four or five Inches of the Mouth of one of their Holes, where they knaw away the Wood till

till they have made a Cavity large enough for their purpoſe; here he makes a very thick and warm Caſe, compoſed of his Web and the little Bits of Wood that he has knawed off making the caſe appear as if covered with Sawduſt, the Inſide being delicately ſmooth and ſhining like White Sattin: within this caſe he changes to the Chryſalis as ſeen out of the caſe at (*c*): he remains in Chryſalis about two Months, and at the expiration of that Time, being ready to come out, he drives himſelf very forcibly forward out of the caſe through a weak part which he providentially leaves to facilitate his paſſage; when he is delivered from the caſe he ſtill drives himſelf forward till he has approached very near the Mouth or Entrance of the Hole, where he immediately breaks from the Chryſalis, leaving the empty Shell half out, as is repreſented in the Plate at (*d*).

But to return again to the Chryſalis. Perhaps not being well acquainted with this Inſect, you would aſk how the Chryſalis which does not appear as formed by Nature to help itſelf in any ſhape, ſhould be capable of moving forward, not having the aſſiſtance of Legs. But if my ingenious Reader will pleaſe to refer to my Draught of the Chryſalis in the Plate, the miſtery will vaniſh: he will there find on the back of the Tail part, every Joint or Diviſion armed with a great number of points, or Saw-like Teeth, which firſt by contracting and then extending himſelf, theſe points faſten in the Caſe, and by ſuch kind of Motion the Head of the Chryſalis muſt go forward, for the Teeth or Points cannot be relieved by any other means, and I do not doubt but the Hooks at the Head were intended to aſſiſt him at that time. When the moth is relieved from the Chryſalis and his Wings dry, He ſets Himſelf in an odd poſition againſt the Tree, his Tail and ends of his Wings lying cloſe and his Head or back part jutting out as if ready to fall from the Tree, thus he remains, as ſeen at (*e*), till Night, when he takes wing and flies away. The upper ſide of his Wings are ſeen at (*f*). The under-ſide having a very Colourleſs appearance and few or no markings, I thought it needleſs to give another Figure of the Moth: and the Hen is much larger than the Cock and richer in Colour, the markings on the Wings of the Cock are leſs in Number, and its Wing more pale and Colourleſs. This is one of the moſt difficult Moths of any we have to breed from the Egg; for no Wood is proof againſt the hardneſs of their devouring chaps, therefore very troubleſome to confine them, and the tireſome length of Time they take in feeding make it altogether not worth the trouble. Nor will a Glazed Pan or Jug hold them, without covered at Top with a Plate, Tile, or ſome hard ſubſtance; for they can with eaſe get up the ſides by making with their Web a ſort of Ladder, by which they eaſily aſcend any ſteep place. See the Caterpillar in the Plate at (*b*), which is creeping on a Ladder of this ſort, and if touched or diſturbed in their motion, they will turn about and bite at its oppoſer with great fury.

I cannot break off the hiſtory of this Moth without mentioning a Chryſalis of one of theſe Moths which I took out of a Willow-Tree: it was remarkably Black and ſoft, which cauſed me to think the Moth would in a ſhort Time make his appearance, but on keeping the Shell two or three Days and not ſeeing any further alteration, I broke it open and to my ſurprize ſaw it ſo full of very

PL. XXIIII

a b c d e f g h

Mr. Harris. ad Vivum

To Sir Armine Wodehouse Bart.
Dedicated by His most Obliged

AGINCOURT

This Plate, is most Humbly
and Obedient Servant.
Moses Harris

very minute Ichneumon's, that it appeared as if it had been crammed with Gunpowder; and to gueſs within a moderate Computation, I ſuppoſe there might be at leaſt twenty thouſand. And how this wretched Inſect underwent its Transformation while ſo full of thoſe deſtroying Animals, is to me very extraordinary: for it is very clear they muſt make their entrance while in the Caterpillar ſtate, for the Chryſalis is too well guarded with a thick and tough caſe for an attack of that ſort.

PLATE XXIV.

The DOTT.

The Greater Bindweed. *Convolvulus Major.*

THE Caterpillar of this Moth is commonly found feeding in the Ditches, about the middle of Auguſt, upon Nettles, Knott-Graſs, the greater Bindweed, and many other Plants. There are two ſorts of them, the one Green the other Brown, of which the Brown ſort always produce the Cock Moth. They are full fed as at (*a*) and (*b*) about the latter end of Auguſt, when they go into the Ground and change to Brown Shining Chryſalides, like that at (*c*). About the end of May they emerge into the Moth ſtate; the Hens lay their Eggs ſoon after Copulation, which adhere to the Food, and the Caterpillars proceeding from theſe Eggs, become full fed about the latter end of Auguſt, as above. The Moth is ſeen flying at (*e*); and at (*d*) ſitting with his Wings cloſe. They are ſeldom taken in the Moth ſtate.

The HUMMING-BIRD.

THIS Moth is taken flying in the day time about the beginning of Auguſt, they fly exceeding ſwift, and are therefore difficult to take: but the Caterpillar and Chryſalis have never yet been found in England.

MARIANA, who has bred them from the Caterpillar, ſays they feed on moſt ſorts of Plants, and that the Ladies Bedſtraw is one. The Caterpillar in the Plate, with the Chryſalis, I copied from the drawing that was ſent Mr. Rooſel, which agrees exactly with that in Marian; by which drawings I find there are two ſorts of the Cater-

Caterpillars, the Green and the Brown, which I have ſhewn in the Plate at (*f*) and (*g*). The Figure of the Chryſalis is ſeen at (*b*), the Moths I drew from one of our Engliſh Moths, the upper ſide of which are ſeen at (*i*), and the under at (*l*).

PLATE XXV.

The EMPEROR.

The Blackthorn. *Prunus Sylveſtris. Germ. Emac.*

THE Eggs of this beautiful Moth are generally fixed by the Hen round the Stalks of the Food, depoſiting them in ſeveral different places, that ſhe may be the more certain of the ſecurity of ſome of them: Should theſe appear of a very light green they are naught, and you may be ſure the Hen has not been copulated; but if of a Browniſh caſt as at (*a*) they are good. They are generally allowed to be a Month in the Egg ſtate, though ſometimes the Caterpillars appear ſooner; but then they generally all die. The young Caterpillars are ſociable, and keep together till about their third Skin, after which they ſeparate and are difficult to find. In their firſt and ſecond Skins they appear very dark, and have a Caſt of Orange Colour down their backs; but when they put off their third Skin, the Green begins to appear. They ſhift ſix Skins before they arrive to be full-fed, which happens about the middle of July; when they ſpin themſelves up in Brown Caſes in the manner ſhewn at (*i*), in order for their change. They remain in Chryſalis during the Winter, and the Moths appear the beginning of April: but ſhould they not all come out then, as is frequently the caſe, the reſt lie till that time twelve Months, and produce Moths not inferior to thoſe produced the year before them. The Hen Moth I have ſhewn flying at (*g*) ſhewing her upper ſide; the under ſide is ſeen at (*b*). The Cock is much leſs, and the under Wings are of an Orange Colour as is ſhewn at (*d*). The Caterpillars likewiſe differ from each other, for that which produces the Male is ſtronger marked with black as may be ſeen at (*b*), while that which produces the Hen is larger and fuller of green. Their Chryſalides may alſo be diſtinguiſhed from each other, the Cock being leſs, and that part which contains his comb like horns very broad as ſhewn at (*c*). The figure at (*f*) is an empty ſhell of the Hen Moth, which is to ſhew in what manner the Tail part of almoſt all Chryſalides, of the Moth kind are extended when the Moth leaves it.

The Food of the Caterpillars is chiefly blackthorn tho' they are often found feeding on the Willow or Oſier in Chelſea Aytes, which is the moſt certain place to find them; the beſt time is about the middle of May when they are in their Black Skin, and as they are then ſociable are more perceptible to the Eye.

To the Right Honourable the Countess of Berkeley

This Plate is humbly dedicated by her Ladyships most Obedient Humble Servant Moses Harris.

the Web or Caſe wherein they change to the Chryſalis is greatly to be admired, being ſo wonderfully formed for the ſecurity of the incloſed Inſect; the entrance or part deſigned by Nature, for the coming forth of the Moth is ſo contrived, that it is almoſt impoſſible for any Inſect to enter; and ſhould they attain the Mouth of the Caſe, which they cannot do, without being very much embarraſſed with the Web, they will meet with a ſecond and more impaſſable defence, which is ſet round with a ſort of Spikes, which all meet in a point or centre, ſomething like the contrivance which is common to be ſeen in ſome ſort of Mouſe-traps, which eaſily admits the Animal one way, but wholly forbids and oppoſes its return.

This will be better underſtood by viewing the Figure at (*t*,) which is half of a Caſe, ſuppoſing the Caſe to be diſected length-ways.

The SMALL EGGER.

THE Hen Egger lays her Eggs toward the latter end of March, which ſhe diſpoſes round a Twig, theſe are covered with a downy or woolly Subſtance, which ſhe does thus; viz: every Egg ſhe lays, which is covered with a gummy or glewy Moiſture, ſhe rubs her Tail all over it, and the Down with which her Tail abounds, adheres to the Egg, and are ſo pulled from her Tail. I do not ſpeak from imagination but from experience having oft-times ſeen them laying their Eggs. Theſe Eggs are hatched in April, when the young Caterpillars begin to ſpin a Web, which they extend larger as they increaſe in ſize, covering it over with a freſh Spinning, every Skin they ſhift, that like an Onion it conſiſts of ſeveral Coats. On this Web they all lie in fair Weather; but when it rains or the Wind blows too hard, they all run in for ſhelter.

Beside this Web, they extend others to the ſeveral branches of the Food, which ſerve as ladders from and to their Web, which they never deſert, without the Buſh which is generally very low, is ſtript bare of Food. When full fed, as ſeen at (*k*) they retire down the Stalk, and finding a convenient place, ſpin themſelves up in Cream coloured Caſes, like that ſeen at (*l*;) wherein they change to their Chryſalides which are ſhort and thick and of a light Nut-brown colour, as ſeen at (*m*.) They lie in that ſtate during the Winter, and the Moths appear about the middle of March. It is a very difficult Moth to bred from the Caterpillar, and ſhould the young Aurelian take home any Caterpillar with intent to breed the Moth, and not take the Web with him, they will all certainly die; notwithſtanding they poſſibly may feed with him till they be full fed. The upperſide, of the Moth is ſeen at (*n*,) and the under at (*o*.) They are ſeldom taken in the Moth ſtate.

The YELLOW TAIL.

THE Eggs which are of a pale green colour are laid by the Hen about the beginning of July, theſe are covered over with a woolly Subſtance as the former, and produce their Caterpillars about the beginning of Auguſt; which feed on Blackthorn, Whitethorn, Oak, Willow, and moſt ſort of fruit Trees. At the approach of Winter they ſpin themſelves little Caſes, in which they remain during the Winter, in Spring they come forth, feed again and become full fed, as at (*p*,) the beginning of June, when they change to the Chryſalides, as ſeen at (*q*,) within a ſpinning. And the Moths appear in about three Weeks after; I have deſcribed the Hen at (*r*,) in the odd poſition in which they always ſit, and the Cock at (*ſ*;) which only differs from the Hen in the Horns, the Cocks being Comb-like, and broad. The Moths are very common and eaſily taken.

PLATE. XXVI.

The GREEN FLY.

The BRAMBLE. *Rubus major fructu Nigro.* J. B.

THE Caterpillar is extremely ſcarce and difficult to find. They feed on the Bloſſoms and Buds of the Black-berry or Bramble, hiding themſelves under the ſmaller green Leaves: the beſt time to ſearch for them, is about the latter end of June or beginning of July, when ſome of them are pretty large; for about the latter end of July, they are full fed, when they appear as repreſented at (*a*) and (*b*,) which laſt is drawn as fell from the leaves on his Back intended to ſhew the flatneſs of his Belly, they now retire and hide themſelves in convenient places in order for their change where they faſten themſelves up by the Tail, and round the middle, with ſmall and tender Threads, in the manner as I have before related of the Hairſtreak. Thus prepared, they change to their Chryſalides which appear like that at (*c*;) they remain in this ſtate during the Winter, and the Flies appear in the middle of April. They fly in Woods, and may oftentimes be taken in plenty. The Male and Female are much alike, although they differ ſomething in ſize; the Hen being rather larger and the ſmall light ſpots in the underſide, the under-wings are rather more conſpicuous.

IT is almoſt in vain to look for the Caterpillar except on ſuch Bramble Buſhes, where you have ſeen the Flies playing in plenty, which you ſometimes may in Woods, then return at the Time when the Caterpillars are pretty near full fed, and while ſome one

To the Rt. Hon.ble Lady Spencer this Plate is most humbly Dedicated by her Ladyship's most obliged humble Servant.

Moses Harris.

DIEU DEFEND LE DROIT

one holds the beating Net, beat the Branches and Heads of Bloſſoms; by this means, and ſearching the Buds, you may be almoſt certain of finding the Caterpillar. The Male is ſeen flying at (*c*) ſhewing the upper Side of his Wings, which are of a deep brown Colour: the Female is deſcribed at (*d*) with her Wings erect, to ſhew the under Side. It is remarkable in this Fly, that when purſued it will ſettle on the Branches of ſome ſmall leav'd Buſh, ſuch as the Blackthorn, with its Wings ſhut; and as it then appears all green, it is ſo like the Leaf that I have very often ſought for it in vain, altho' I thought, at the ſame time, that I had taken exact notice of the place where it ſettled.

The DARK GREEN FRITILLARIA.

THE firſt Appearance of this Fly is about the Beginning of June. It is extremely timorous and ſwift of Wing; and ſhould you, as it flies by you, ſtrike at it with your Nets and miſs it, it is in vain to purſue it; for, being frighted, it is wild, and will not ſettle till it be quite out of your Sight. The beſt Time to take them is toward the Evening, when they reſt, and feed on the yellow Flowers of the Hawkweed, and the Bloſſoms of the Bramble, in the Receſſes of Woods, where it is open to receive the Sun-beams, and a Shelter from the Wind; then, if you tread ſoftly, you may come very near them.

THIS Fly was never bred from the Caterpillar that ever I could hear, but a Gentleman of my acquaintance informed me that he once got one of the Caterpillars which he found on the Ground in a Wood, about the Beginning of May; that it was of the ſpiked or prickly Kind, and appeared in all other reſpects ſo like the Admirable, that he was deceived. It changed into Chryſalis, hanging by the Tail, in two or three Days after, but died in that State, juſt before the Time of its Appearance in the Fly State, which he ſaid he knew by the Spots on the Wings, appearing through the Chryſalis; finding it did not come out, after waiting ſome Days, he broke it open, and diſcovered it to be the Dark-green Fritillaria.

I HAVE ſhewn the Female flying at (*c*) diſplaying the upper Side of her Wings: the Male is ſeen at (*p*) as ſettled with his Wings erect to ſhew the under Side, which of Male and Female are finely ſpotted with ſilver; the Female lays her Eggs about the Middle of July, and the Caterpillars continue in that State during the Winter, but, what they feed on has never yet been diſcovered.

The Black Oval WATER BEETLE.

ABOUT the latter End of June and the greateſt Part of July the Caterpillars of this Beetle may be found of different Sizes. When full fed they appear like that at (*e*) of a deep Olive, or dirty green Colour on the Back, the Belly is ſomething lighter. Their Food is commonly the Caterpillars of other Water-inſects; indeed they are ſo rapacious that they will deſtroy Inſects much larger than themſelves, or any thing that comes in their way, as Flies, ſmall Moths, that by accident fall in the Water, and the ſmall Worms, which are by Fiſhermen called Blood-worms, they are remarkably fond of. When ready for their Change, they return to the Bank, where, in ſome of the holes of the broken earth, they get in, and make themſelves a hollow Cave, wherein they change to the Nympha, as ſeen at (*f*) the Beetles appear toward the latter End of the Summer, and continue during the Winter in that State I have deſcribed the Beetle crawling at (*g*) to ſhew its Back; at (*b*) it is ſhewn lying on its Back, ſhewing its Legs, and the Formation of its Belly. Again at (*i*) I have ſhewn it flying, whereby the thin membraneous Wings are diſcovered, as well as the Formation of the naked Back, which are concealed when the Shell-wings are ſhut.

The FLAT BLUE-TAIL'D LIBELLA.

THE Caterpillars are commonly found in foul Ditches and ſtagnated Waters, in April and May, of different Sizes. Theſe likewiſe feed on other Water-inſects, and become full-fed in the Month of June, and appear as at (*k*); they then crawl up out of the Water by the help of a Stone, Stick, or Piece of Graſs, where, holding faſt by their Legs, they preſently burſt on the back, and the Libella draws itſelf gently out, as at (*l*), it then holds by the Legs, with its Wings hanging downwards, where they gradually ſtretch and dry, and are quickly fit for flight. There are two Sorts of this Libella, the one with blue Tails, the other with brown: theſe are allowed to be Male and Female; that with the blue Tail is ſuppoſed to be the Female. The Libella at (*n*) is of a different Claſs of Libellas, though by ſome it has been miſtaken for the Male of the Blue-tail'd; and I had nearly fallen into that Error myſelf; for I happened to be out one Afternoon and perceived a Blue-tail'd Libella and another of the above-mentioned Sort playing together over a Pond of Water; they wantoned about, and purſued each other a long while, often ſottling one a-top of the other, as though going to copulate, ſo that I really concluded it to be the Male of the Blue-tail'd Sort: But I was ſoon convinced of my Error. The Blue-tail'd Libella is deſcribed in the Plate at (*m*). The Caterpillars of almoſt all the Libellas are to be found in ſuch Ponds as I have deſcribed, in April or May. The Method uſed in taking them is, with what the Fiſhermen call a Landing-net, fixed to the End of a long Stick, with which the Mud and Weeds are taken up from the Bottom of Ponds, in which you are to ſearch for the Caterpillars. The Ponds in and about Woods are generally the beſt.

To Her Grace the Dutchess of Norfolk

This Plate is humbly dedicated by Her Grace's most devoted Servant.

Moses Harris.

PLATE XXVII.

THE RUBY TYGER.

THE SWEET-SCENTED PEA.

THE Moth is generally bred in the Month of *June*; and the Hen, after copulation, flies in ſearch of a convenient and ſafe Place to depoſite her Eggs; which ſhe diſpoſes of in great Regularity and exact Order, as at *(h)*: theſe are green and gloſſy. The young Caterpillars, when they proceed from the Eggs, wherein they lay about fourteen Days, are of a light Olive Colour, covered with light tender Hair, which appears darker in every Skin. In about the third Skin they ceaſe feeding, and conceal themſelves during the Winter. Early in the Spring they begin to feed again, appearing in their laſt Skin about the Middle of *May*; ſome much ſooner, others later; for I have found the Caterpillar, in the Middle of *June*, feeding on *Ragwort* and likewiſe on *Hounds-tongue*; for, like others of this Claſs, they will refuſe hardly any Thing.

WHEN full fed, as at *(i)*, they prepare for their Change, by ſpining themſelves up in a ſlight Web, as at *(k)*, wherein they change to a black Chryſalis, as ſhown out of the Web at *(l)*. They lie in this State about twenty-eight Days, and then the Moths appear; one of which is exactly deſcribed in the Plate at (*m*). This Moth is not very plentifully found; yet an Aurelian of my Acquaintance has a Hen which flew into his Window in London, and layed near an hundred Eggs, which produced Caterpillars. Theſe were fed on Lettice; but, being ſheltered by the Houſe from the Intemperance of the Weather, they fed and ſhifted their Skins very faſt; and, even after the cold Seaſon was very far advanced, ſo that moſt of them were in their laſt Skin, and too near their Change to undergo the Severities of the Winter: and it is an Obſervation we in general make, that, when any Caterpillars, which are to continue during the Winter in that State, are too forward, we have little or no Expectation of their producing any Flies; for they commonly all die in the enſuing Spring; as was the Caſe here.

THE WALL.

THE firſt Appearance of this Fly is about the Middle of *May*; and, towards the End of that Month, they begin to lay their Eggs on the Graſs; which are, without Doubt, fixed faſt thereon by a tennatious Matter. The Caterpillars feed thereon, and become full fed about the Middle of *July*; and appear as repreſented in the Plate at *(a)*. They then hang themſelves up by the Tail, as at (*b*); where, after about two Days, they change into a ſhort, thick, green Chryſalis, of a remarkable Form, as deſcribed in the Plate at (*d*); which is a profile Draught of the Chryſalis. The Chryſalis at (*e*) ſhews its back Parts, that the true Shape of this Chryſalis might be the better comprehended. The Fly appears about the beginning of *Auguſt*. The Caterpillars proceeding from theſe, continue, during the Winter, in that State; change to Chryſalides about the beginning of *May*; and the Flies appear about the Middle of the ſame Month, as above. The Male and Female differ pretty much in the Markings of their Wings, as well as in other Reſpects, as to Colour and Szie; as may be ſeen by comparing them in the Plate. The upper Side of the Female is ſeen at (*f*), and the under Side at (*b*). The upper Side of the Male is ſeen at (*g*), where it is repreſented as fixed in a Chip Box with a Pin. This Fly is very common in Fields, and by Road-ſides. It delights to fly along very low in dry Ditches, ſeldom ſtraying from the Bank, or Field, where it was bred; but, when it comes to the End of the Bank, will return back again, frequently ſettling againſt the Bank, or perhaps againſt the Side of a Wall; and is, for this Reaſon, called THE WALL FLIE.

THE WHITE SPOT.

OF this Moth little or nothing is known, but that it is taken in Woods in the Month of *May*. I have often taken it in *Cain Wood*, which is between *Highgate* and *Hampſtead*; but they are now taken in the greateſt Plenty at *Tottenham Wood*, in the Cutt. There is an Alley in *Oak-of-Honour Wood*, which is known by the Name of *White Spot Walk*, which leads from the *White Admirable Walk* to the *Long Gallery*; but whether the *White Spots* ever flew there in Plenty, they beſt know who firſt agreed to call it by that Name. I have given a Draught of the Moth in this Plate at (*p*).

To Lady Eckline This Plate is humbly Dedicated by
her Ladyships most Obedient Servt Moses Harris

The DUKE of BURGUNDY, Frittillaria,

COMMONLY called *the Burgundy*, is one of the four Fritillarias which want the ſilver Spots, and is the leaſt of them all. They always fly in Woods, and not very high above the Graſs. Their moſt plentiful Time of Flight is about the Middle of *May*. They are very nimble, yet I cannot ſay they are difficult to take. I never ſaw them fly in Plenty any where but at *Comb-Wood*, though I have known them to have been taken in great Plenty by others in ſeveral other Places.

As to the Caterpillars and Chryſalides, they have never yet been diſcovered by any us.

I have deſcribed the upper Side at (*n*), and the under at (*o*), where it is ſhewn as ſitting with its Wings cloſe.

PLATE XXVIII.

The DISHCLOUT, or GREASEY FRITILLARIA.

The Devil's Bit, *Scabioſa Radice Succiſa*, Ray's Syn.

THE beſt Time to find the Caterpillars of this Fly is from about the Middle of *April* to the Beginning of *May*, being then almoſt all in their laſt Skin. They may be found in Plenty the latter End of *March*, but then you can have no Food for them, it not being then come out of the Ground. They are likewiſe ſo troubleſome to breed, (for they never will eat except the Sun be upon them), that it is better to ſtay till they be nearer their Change.

They are generally found on the Side of a Hill that riſes with an eaſy aſcent and fronts the Eaſt; by which they have the Sun moſt powerful in a Morning, and avoid his

his too ſcorching Heat in the Afternoon. It was ſaid that they fed on Plantain and Graſs, but I found that to be a Miſtake, having often endeavoured to feed them with both, but my Endeavours were always fruitleſs. At length I was determined to come at the Truth; and accordingly, on the Eighteenth of *April*, 1760, I went to *Neſ-don*, near *Welſdon*, about ſeven Miles from *London*, where I was informed they were in great Plenty, as indeed I found them to be. Here I took great Pains to watch their Actions for full three Hours. I paid them ſeveral Viſits a few Days afterwards, that I might be capable of giving a ſatisfactory Account of them. Their Food is the *Devil's Bit*, which, at that Time of the Year, hardly appears above Ground. They feed on the opening Leaves as faſt as they come up; which is the Reaſon why thoſe who found the Caterpillars could never ſee the Food. When the Sun happens to be ſhut in by the Clouds, they immediately ſtand ſtill, and, though eating very greedily, they will ſuddenly ceaſe; but, on the Return of the Sun-beams, they run nimbly over the Tops of the Graſs, and deſcend into every Vacancy of the Graſs they can find in ſearch of their Food. Nor did I ever find above two at one Root, although the Field appeared to be covered with the Caterpillars.

When in their laſt Skin they appear, as at (*e*), very black and thickly ſet with branched Spikes; and their Backs and Sides are powdered with white Specks. The Preparation they make for the Preſervation of their Chryſalides is much to be admired. When one is ready for his Transformation, his firſt Buſineſs is to draw ſeveral Pieces, or Blades, of Graſs acroſs each other toward the Top. Theſe he faſtens together with his Webb; and then beneath the centre, where the Blades of Graſs interſect each other, he hangs himſelf pendulous by the Tail, and changes to the Chryſalis, which is juſtly deſcribed at (*f*). This Method they have of providing for their Safety while in the Chryſalis State, is a ſtrong Proof of the amazing Inſtinct of theſe little Creatures. They are not only hereby hid from the Sight of Birds, but defended from the Damage they might otherways ſuſtain in boiſterous and windy Weather; for, as the Graſs is drawn from every Side, let the Wind blow which Way it will, one or more of the Pieces of the Graſs immediately acts in the Manner of a ſtay.

The Flie appears from the Beginning to the Middle of *May*. The Female is deſcribed, ſhewing her upper Side, at (*g*), and her under Side at (*h*). The Male is ſeen at (*i*), ſhewing his upper Side. The Eggs of this Flie I never ſaw; but, as I know it is the Nature of this Claſs to faſten their Eggs to the Food, I ſhould ſuppoſe theſe ſo to do. As to the Caterpillars, I am pretty certain they continue all the Winter in that State, for I have found them early in *March* (which is before their Food appears) in about their third Skin, where they have lain all together on a dead and withered Leaf under a thin Web. I have opened the Web and found them numbed, and as it were lifeleſs; therefore it is not in the leaſt to be doubted but they had remained ſo from the beginning of the Winter. It is remarkable in this Inſect that neither Flie nor Caterpillar will ſtray from the Field in which they were bred; and, though I have ſeen ſome thouſands in the Field, yet I never could find one in the Meadows adjoining. They fly very low over the Tops of the Graſs. The Reaſon why this Flie is called THE GREASEY FRITILLARIA, is, becauſe the under Side of the upper Wing always appears greaſey.

THE

The High Brown Fritillaria.

THIS Fly may be caught in plenty about the beginning of June, or at the ſame time and place as the Darkgreens; they fly with great rapidity, therefore, taken with ſome difficulty. The Caterpillar and Chryſalis, has never yet been diſcovered in England: I have taken a great deal of pains to find it, but all to no purpoſe. I ſhould ſuppoſe, according to Mr. Admiral, from whoſe inimitable work, I took the Caterpillar and Chryſalis in the plate, they ſhould feed on the violet; but I have often ſearched for it without ſucceſs, the time to ſeek it is about the middle of May; for theſe likewiſe lay, during the winter, in the Caterpillar ſtate. The upper-ſide of the female is ſeen at *(c)*, and her under-ſide is ſeen at *(d)*, where it is ſhewn as ſettled with its wings erect, on the flower of the Heart's Eaſe, extracting with its proboſcis, the liquid honey: the male is like the female, but much leſs; they delight to fly in woods and ſettle on the bloſſoms of the bramble.

The Treble Barrs.

THIS pretty Moth is generally taken flying, in and about woods, any day towards the latter end of May, in the morning, juſt after ſun-riſe. The Caterpillar has not yet been diſcovered, and, altho' the Moth is now taken in ſome plenty, yet, ſome years ago it was eſteemed a great ſcarcity. I have deſcribed it in the plate at *(k)*, ſhewing the upper-ſide of his wings; the under-ſide is of a very pale, browniſh colour, without any markings; I therefore thought it needleſs to ſhew it.

Speckled Yellow.

ABOUT the middle of May, is the time to go in ſearch of this Moth; they are always found in woods, and in the day time ſeem remarkably ſociable, for the moſt part haunting ſome particular place in the woods; altho' it is confeſt, they may be taken or met with, ſingly, and that in almoſt any part of the wood at the ſame time; yet I obſerve, there is always a favourite place or ſpot, in every wood where they breed, which they moſt affect, and are there ſeen in great plenty; ſometimes I have ſeen great numbers hovering about the furz-buſh, that at a diſtance (they being nearly the ſame colour with the yellow flowers of the furz) it appears, as if the leaves of the flowers were blown about by the wind. Theſe

Moths

Moths appearing to me ſo particularly fond of this buſh, made me almoſt believe the Caterpillar fed on it; but though I have beat it many times, I never could find that any Caterpillars feed thereon. I have ſhewn the Moth flying, at *(m)*, ſhewing the upper-ſide; the under-ſide is marked as the upper, excepting that on the under-ſide, the upper wings are marked ſtrongeſt, and contrarily, the under wings are ſtrongeſt on the upper ſide.

Crimſon and Gold.

THIS richly coloured Moth, is generally taken by beating the nettles, which is therefore ſuppoſed to be the food of the Caterpillar; but it has not, however, yet been found. I have ſhewn it flying at *(l)*, diſplaying its upper-ſide, the under-ſide is nearly marked the ſame as the upper. The beſt time to take this Moth in its beauty, is about the middle of May.

PLATE XXIX.

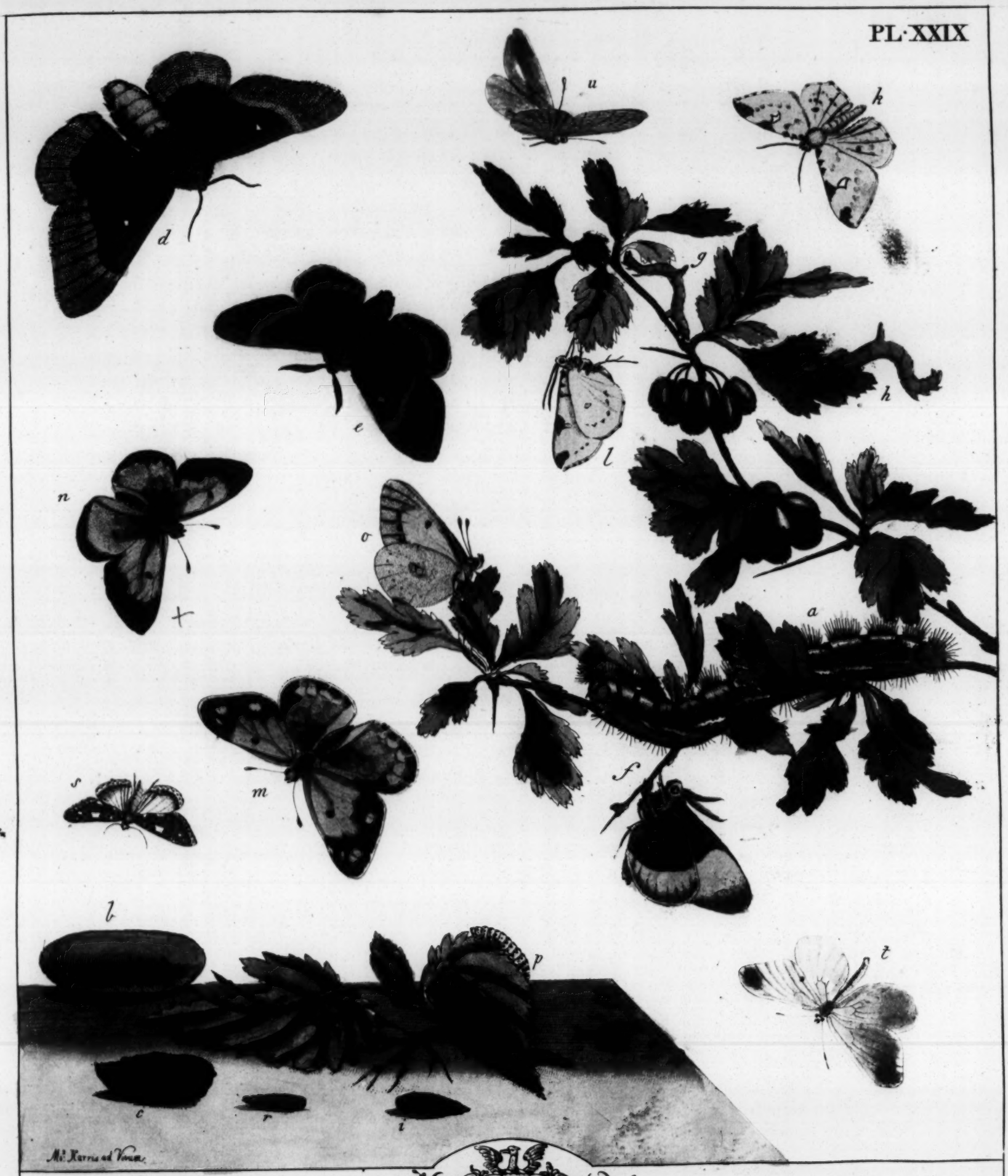
The GREAT-EGGER.

The WHITE-THORN.

I HAVE before, in the Twenty-fifth Plate, given the hiſtory of the Small-Egger, I ſhall now proceed to give the beſt account I can of the Great-Egger. The Hen Moth lays her eggs about the beginning of June, ſhe does not fix them to the food, but drops them looſly to the ground; they are of an oval form, of a light brown colour, prettily mottled; they continue in the egg ſtate about a month, but I have known them lay five weeks before they have produced Caterpillars; but thoſe Caterpillars have proved as healthy and ſtrong, as thoſe which have not laid ſo long in the egg. The young Caterpillars feed on the White-thorn, during the remaining part of the ſummer, but when the leaves are ſtrip'd off by the approach of froſty weather, they continue to feed on Laureltine, and other ever-greens, growing but ſlowly during the winter. When full fed, as at *(a)*, which is about the middle of May, they are about four inches long, covered with brown hair, acroſs each joint is a very black ſtripe, which ſtripe is naked, tho' appearing like velvet: along each ſide it hath many irregular white marks which lay a little oblique; it has likewiſe, two little tufts or tuſſocks, one on each ſide the head, appearing like ears, their motion is indifferently ſlow. When fit for their change, they ſpin themſelves, each in a long, oval, brown caſe as at *(b)*, this is thin, and of a tolerable ſtrength, or of the ſubſtance of pretty thick paper. The Chryſalis is

ſhewn

PL·XXIX



To the Hon.ble Richard Bateman

This Plate is humbly Dedicated by his most Obedient Servant Moses Harris.

ſhewn at *(c)*, as taken out of the Caſe. In this Caſe they continue about one Month, when the Moths appear. The Cock ſhews his upper Side at *(e)*, and the under is diſcovered at *(f)* where he is ſeen as hanging by a Sprig, to dry and ſtretch his Wings, ſuppoſed to be juſt come from the Chryſalis; the Hen ſhews her upper Side at *(d)*; ſhe is larger, and much paler than the Cock. The Aurelians take this Moth by Sembling; their Manner is, to go out with a live Hen in a Box *(a)*, which is covered down with Gauze or Crape; when they are come to the appointed Place, where they are pretty certain there is a Brood, they ſet the Box on the Ground, and ſtand ready with their Nets; the Cocks will quickly come and attempt to get at the Hen. I have known great Numbers taken in one Hour's Time; and it may be depended on, that, if any one goes with a Hen, in almoſt any Place of the Country, they will not fail of Succeſs; not only the Egger and Vapourers, but any Moth may be taken by Sembling; but the above-deſcribed Method is chiefly uſed to the laſt-mentioned, As to the other large Kind of Moths, ſuch as the Private Poplar, Emperor, Lime, &c. &c. the uſual Method is, to tie the Hen to a Tree, Buſh, &c. lightly tied or faſtened round the Body with a Piece of ſewing Thread, and there to be left all Night, and in the Morning, when you return, you will almoſt be certain to find Madam accompanied by her Spark, who will not deſert his Miſtreſs, though her Favours be ever ſo eaſily obtained.

The YELLOW, or BRIMSTONE MOTH.

ITS Caterpillar feeds on White-thorn, is of the Luper Kind, and remarkable for a Protuberance in the Middle of its Back, as is ſeen at *(g)* and *(b)*; this Protuberance is ſometimes divided, and appears like two. It changes into a Chryſalis in the Month of September, and the Moth appears in the Middle, or towards the latter End of May. Its Chryſalis is ſhewn at *(i)*; the upper Side the Moth is deſcribed at *(k)*, and the under at *(l)*, where it is ſeen hanging to dry its Wings, as juſt come out of the Chryſalis. It is to be taken flying in an Evening, in Lanes which are hedged with Whitethorn; it is eaſily taken, and is commonly found in Company with the Silver Ground.

CLOUDED YELLOW.

THIS beautiful Fly is taken in Meadows, in the Month of Auguſt; they appear fond of ſettling on the Yellow Lupins and Thiſtle. They have been taken flying, in Plenty, on Epping Forreſt; but as they ſeldom haunt one Place for many ſucceſſive Seaſons, I can't venture to mention it as a Place where they are to be found. Where there is a Brood, the Times of the Day to find them are at Eight in the Morning and Four in the Afternoon; but never in the Middle of the Day, when they conceal themſelves to reſt. They fly very faſt, therefore not eaſily taken; the Male,

Male, in particular, flies exceeding ſwift. I have ſhewn the upper Side of the Female at *(m)*, and that of the Male at *(n)*; the under Side of the Male is ſhewn at *(o)*. Their Caterpillars were never found.

CHINA MARK LIKENESS.

THE Caterpillar of this Moth is of a bright Yellow, and full of black Spots, as is ſhewn at (*p*); they are commonly found ſpun up in the Nettles, as is ſhewn at (*q*). In the Beginning of May they change into Chryſalis, which is ſeen at (*r*). About the Middle and the latter End of that Month the Moths appear. The Moth is deſcribed in the Plate at (*s*).

The WOOD WHITE.

THIS is the leaſt of all the White Flies, and is always taken flying in or near Woods; 'tis remarkable for the Smallneſs of its Body, it being accounted the leaſt of the Butterfly Kind, though not the ſhorteſt; I likewiſe obſerve they ſeldom are ſeen to ſettle. They fly twice a Year, or at the ſame Times with the large and ſmall Garden Whites, viz. May and Auguſt. The Caterpillar is utterly unknown, and little Expectation there is to believe it ever will, as it muſt be very ſmall, according to the Fly, which is ſeldom ſeen but on its Paſſage. It is deſcribed in the Plate at *(t)* and *(u)*.

PLATE XXX.

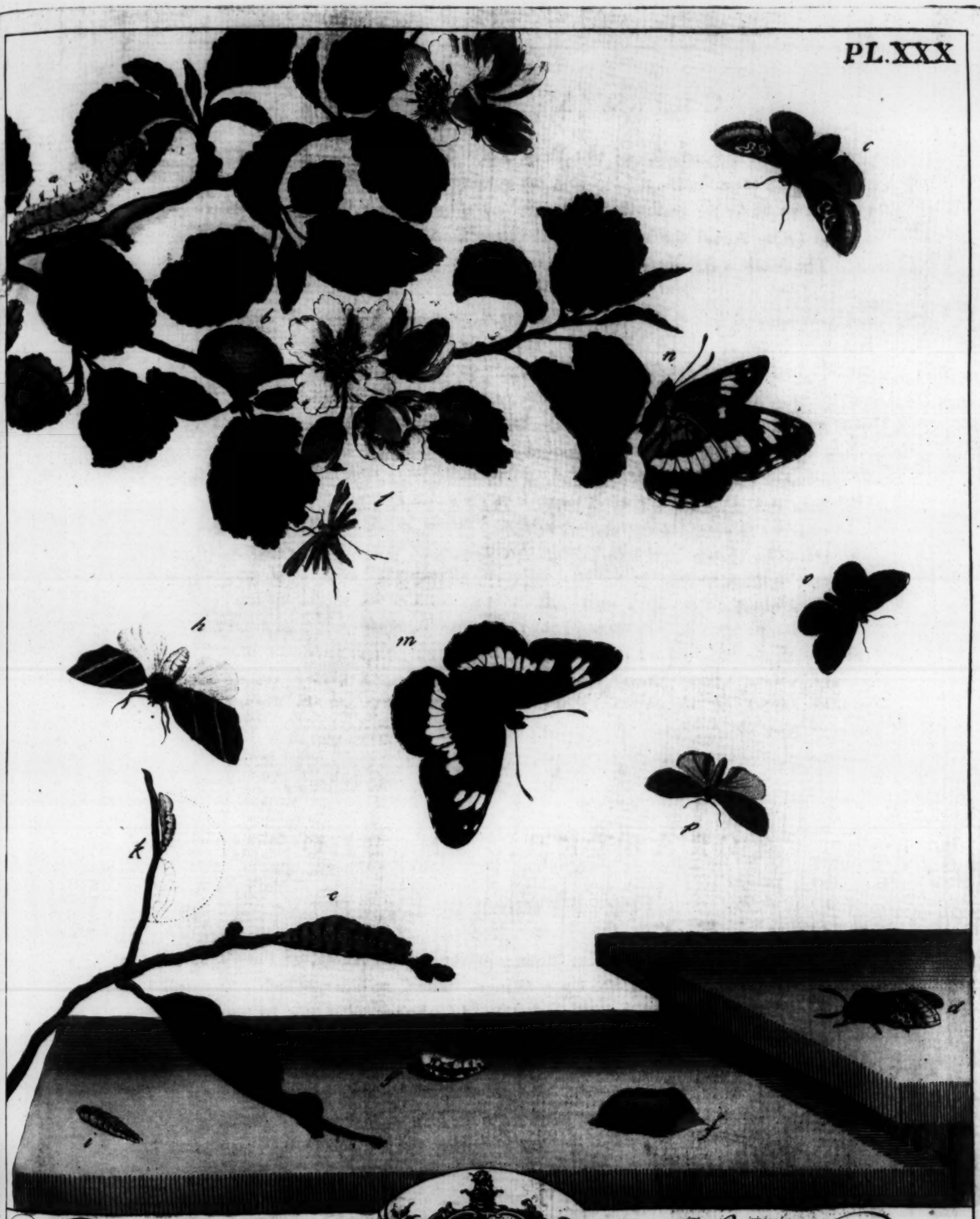
CRABTREE IN BLOOM.

The FIGURE EIGHT.

IT is plainly ſeen why this Moth is called by this Name, as the Figure Eight is ſo conſpicuous on the upper Wings. The Caterpillar, which is ſeen full fed at (*a*) feeds on Blackthorn, Whitethorn, and Crabtree, and is taken by beating in May and June; changes to Chryſalis in a pretty hard Caſe, as at (*b*); and the Moth appears in the Month of Auguſt. I have ſhewn the Female flying at (*c*), and the Male, as ſettled on the Stone, at (*d*); 'tis known from the Hen by the Broadneſs of his Horns, which are ramified, while thoſe of the Hen are like ſmall Thread.

The

PL.XXX



To the Hon.ble John Ward

This Plate is humbly Dedicated by his most Obedient Serv.t Moses Harris

Brown Plumed.

I Found one of theſe Caterpillars on the 6th of Auguſt, feeding on the common thiſtle; it appeared of a fleſh colour, but on a nearer view finely freckled with variety of different tints: the whole Caterpillar was flat, and the belly ſeem'd to adhere to the leaf ſomewhat like the ſnail, for there was no appearance of any legs; it was broadeſt in the middle, and from thence grew taper toward the head and tail, which was very ſmall; and I believe the whole Caterpillar might be about three quarters of an inch long. I did not diſturb it by taking it off from the leaf, but brought it home, together with as much of the plant as I thought convenient, and ſet it in a bottle of water in one of my cages; it ſeem'd to feed pretty hearty till the 11th, when it ceaſed feeding; and the next day it fixed itſelf up by the tail againſt a bit of ſmall dry ſtalk put by chance in the bottle together with the thiſtle; the head part of the Chryſalis was upward: a little ſurpriz'd at the oddneſs of the poſition in which it had fixed itſelf (which is very rare in the moth kind) I ventur'd to touch it, to ſee if it was ſecur'd by a thread round the middle, which thoſe that faſten themſelves erect in this manner commonly are, when I was agreeably ſurpriz'd at its giving itſelf a ſudden ſpring backward, its head then hanging down, as is ſhown at *(k)*, the motion of the head being deſcribed by a dotted line: he did not remain above two ſeconds of time in this poſition; and then, with as ſwift a motion as before, ſprung upward and reaſſumed its former poſture. I waited with much impatience till the 22d of Auguſt, when it produced the brown Plumed Moth ſhewn at *(l)*. It has been ſuppoſed, and many have inſiſted on this being the male to the white Plumed Moth; but their being produced at two different times of the year, and their reſpective haunts ſo greatly diſagreeing, theſe for the moſt part being found in woods, and the other on nettles by ditch ſides, I am tempted to conclude them of different ſpecies.

Scarce Silver Lines.

THE Caterpillars are taken by beating the oak trees which grow in hedges the latter end of May, 'tis all over of a fine green, and is remarkable for a riſeing on the back towards the head. It becomes full fed, as deſcribed at *(e)*, about the beginning of June, when it prepares itſelf for its transformation by ſecuring itſelf in a pretty ſtrong caſe, the form of which is deſcribed at *(f)*; this is made faſt to the branch or body of the tree. Within this caſe it changes to a white Chryſalis, which is remarkable for a broad black mark down the back, as ſeen at *(g)*. The Moth appears the latter end of June, and is deſcribed in the plate at *(b)*. This is call'd the Scarce Silver Lines, on account of its ſimilitude to that in the tenth plate, but the lines in this Moth, are not of that ſilver or gloſſy white, as in that; but of a bright yellow, or ſtraw colour.

The

The White Admirable.

IN all my reſearches in the Inſect world, I have not been able to diſcover the Caterpillar of this excellent Fly. I have watched the females ſeveral times in woods, thinking, to find them laying their eggs; I have likewiſe beat every tree and ſhrub I could think on, about a month before their time of flight, but to none effect; ſo all that I can inform my reader is, that the Fly may be taken in woods, where they are found in plenty the latter end of June, and beginning of July; they fly very rapidly, often ſkiming like a ſwallow, and are fond of ſettling on the leaves of the oak; ſometimes they ſettle on the ground, in the ſhady paths of the woods: they are very timorous, and when perſued, with wonderful ſwiftneſs dart over the tops of the higheſt trees, or ſettle on the topmoſt branches, where they will be ſure to tire your patience ere they will remove. By a gentlemen lately arrived from ſome part of Germany, I have received an account, that this Fly lays her eggs on the very tops of the higheſt poplars; where they are hatched, and remain during the winter, in the Caterpillar ſtate, ſecuring themſelves by their web or ſpinnings; that in the ſpring they feed again, when awakened by the warmth of the ſun from their dorment ſtate, and become full fed the beginning of June; change to the Chryſalis, hanging by the tail; and the Fly is produced the end of June; this account certainly carries with it a great appearance of truth, more eſpecially as it is ſimilar to the hiſtory of ſeveral of our Engliſh inſects, in particular the Purple Emperor; and indeed I did ever conſider the White Admirable of that claſs; I have deſcribed the upper ſide at *(m)*, and the under at *(n)*.

Chimney Sweeper.

THIS ſable-coloured Moth is never ſeen but in woods, and their time of flight is about the beginning of June; they fly very low, and are eaſily taken; they do, for the moſt part, frequent ſome particular ſpot in the wood, where many of them may be ſeen together, and 'tis but ſeldom that one is ſeen alone; 'tis deſcribed in the plate at *(o)*. I thought it needleſs to deſcribe the underſide, it being ſemular to the upper.

Red Arches.

THIS Moth is generally taken by beating the boughs of the oak, in woods, the latter end of June, and beginning of July; the moſt likely oaks to anſwer the purpoſes, are ſuch as are uſed to be cut away every few years for faggoting.

For

PL: XXXI.

To the Hon.ble Norborne Berkeley

This Plate is humbly Dedicated by his most Obedient Servant Moses Harris

For this uſe we commonly provide a piece of cloth, about four feet ſquare, with ſockets on two of the ſides, in the manner of the batfolding netts; through theſe ſockets, two ſticks are put, of a moderate length, ſo as conveniently to hold the cloth extended under thoſe ſhort trees, while another beats the boughs. The Caterpillar and Chryſalis remain unknown. When it falls in the ſheet it ſeems to all appearance dead, and will endure handling pretty roughly before it will ſtir. It is deſcribed in the plate at *(p)*, ſhewing the upper ſide.

PLATE XXXI.

The SNOUT-EGGER LIKENESS.

THIS Caterpillar may be found feeding on nettles the beginning of May, at which time it is very full fed, and appears as at *(f)*; it is of the Quarter-Luper kind, and about an inch or better in length; its colour is green, with two white lines on each ſide the body, which run from head to tail; it hath ſome few hairs; when ready for its transformation it ſpins a ſlight web on the ſurface of the earth, wherein it changes to a light brown Chryſalis, ſeen in the plate at *(g)*; and at the expiration of three weeks, the Moth appears; this is ſhewn at *(b)*, where its upper ſide is deſcribed.

The Small Pearl Border Frittillaria.

THE firſt appearance of this Fly is about the latter end of May, or ſoon after the Pearl Borders; its haunts are always in woods, where it ſkims ſwiftly over the tops of the graſs; they are ſeen in plenty, yet the Caterpillars have not been hitherto diſcovered. The upper ſide is ſeen at *(i)*, and the under at *(k)*.

The Clifden Nonpareile.

WE are now come to treat of one of the ſcarceſt Moths of the Engliſh production; although indeed much cannot be ſaid reſpecting its hiſtory, that may with certainty be depended on: for although the Aurelians are naturally induſtrious through their continued hope of meeting with ſomthing new, yet in all their reſearches,

reſearches, but two of the Moths have been taken hitherto; the firſt at Clifden in Buckinghamſhire, in July, and was in the poſſeſſion of Eſquire Lockyer of Ealing; the other is now in the cabinet of Mr. Belliard, of Pall-Mall, from which fine Moth, I have coloured thoſe in the plate: but the Caterpillar and Chryſalis have never been ſeen in England. Thoſe which I have introduced in the work, are copied from the excellent work of Mr. Admiral, the truth of whoſe drawings, I ſhould do him great injuſtice to doubt of. But we are ſtill at a loſs for the food of the Caterpillar, for altho' that Gentleman has repreſented the Chryſalis in one place ſeemingly ſpun up in the nettles, yet that is no inference of its being the food of this inſect; but if we may judge from appearances only, it ſhould ſeem the Caterpillar feeds high on ſome tree, as the Caterpillars of the reſt of this claſs do; which are the Crimſon Underwing, and Red Underwing, and appears in the Moth about the ſame time of the year; neither do I only ſuppoſe ſo from the claſs to which it belongs altogether, but from the length of the middle or belly legs, as may be ſeen by the extended leg, near the letter *(a)*, in the plate; for I obſerve all thoſe Caterpillars having ſuch legs, do feed on ſome tree, and hold ſo faſt to the branches, that 'tis a very difficult matter to diſengage them, without ſome material damage; of this matter the Green Silver-Lines and Scarce Silver-Lines are inſtances; likewiſe the December-Moth, the Spider-Caterpillar, and ſeveral others. If theſe did not feed high, and ſo likely to ſuffer by falls, why ſhould nature make ſuch proviſion for their ſafety? the December-Moth, is indeed hairy, which would greatly ſave it from the hurt it might otherways ſuſtain by a fall, but yet it muſt be obſerved that this Caterpillar is perhaps one of the ſloweſt movers of any I know of, and ſhould it fall from the tree to the ground, it would be a doubt whether it would not periſh ere it attained to its food again; therefore I am naturally directed to this concluſion from the aforeſaid conſiderations, that it feeds on ſome high tree, or at at leaſt in ſuch places where a fall would be certainly detrimental; the Caterpillar is deſcribed at (*a*), the ſpining at (*b*), the Chryſalis at (*c*); the upper ſide of the Moth is ſhewn at (*d*), and the under at (*e*).

PLATE XXXII.

The MEADOW-BROWN.

ALTHOUGH this Fly is, I believe, the moſt common among us, yet the Caterpillar is very rarely ſeen; which is very extraordinary, conſidering 'tis almoſt eleven months in that ſtate; the firſt appearance of the Fly is, as near as can be, about the eleventh of June; the hens when impregnated, caſt forth their eggs, but I cannot be certain whether they fix them to the blades of graſs, or ſcatter them looſe on the ground: the young Caterpillars, produced by the eggs, feed on

To Rich.d Guy Esq.r
Dedicated by his

this Plate is Humbly
Obliged Servant
MOSES HARRIS.

on the meadow graſs, during the ſummer, and conceal themſelves all the cold ſeaſon; during which time of concealment, they do not eat, nor move till the ſpring; they then come forth and feed till about the tenth of May, when they are about full fed as at (*a*); they then hang themſelves up by the tail, and change to a ſhort thick green Chryſalis, with dark brown markings, as is exactly deſcribed at (*b*); the female Fly, ſhews her upperſide at (*c*), and the under at (*d*); the male is deſcribed at (*e*), ſhewing the underſide.

Wood Lady.

ABOUT the 6th of May, is the time when this Fly makes its firſt appearance; and ſoon after that, they are ſeen in plenty in meadows; they fly by hedge ſides, and frequently traverſe round the field, cloſe by the hedge; they very ſeldom ſettle, and when they do, 'tis but for a very ſhort time; I am not certain of their food, for thoſe Caterpillars which have hitherto been found proved full fed; and had ſtrayed from their food, to ſeek a place proper for their transformation. But ſo far of their hiſtory may be depended on, that they lay in the Chryſalis ſtate, during the winter, and the Fly is produced the beginning of May; for ſo did thoſe which were taken in the Caterpillar ſtate. I have deſcribed the Caterpillar at (*f*). The Chryſalis with its manner of ſecuring itſelf, is ſhewn at (*i*). The upperſide of the female is ſeen at (*g*), and the male at (*h*).

The Grizzle.

ABOUT the beginning of May, this Fly makes its firſt appearance; it delights chiefly in woods, or ſhrubby places, where fern grows, but neither the Caterpillar or the Chryſalis, have yet been diſcovered in England; Mr. Roeſel ſays, the Caterpillar was found on the mallow, where it lay concealed on a leaf, incloſed in a web, which was ſpun over the leaf; it appears ſhort and thick, when not in motion; of a rediſh grey, or pale brown colour, having a dark ſtripe down the back, and another along each ſide, of a lighter hue; it lays in the Chryſalis ſtate eleven days; and the Fly when it appears from the Chryſalis, produces blood, like that of the ſmall Tortoiſe-ſhell. I have ſhewn the female flying at *(l)*, and the male at *(m)*, ſetting, to ſhew the underſide of the wings.

PLATE XXXIII.

The POPLAR-HAWK.

THE Caterpillars of this Moth are produced from a ſmall round pellucid egg, of the ſize and colour ſeen in the plate at *(c)*; theſe are diſpoſed by the parent, on the twigs of the poplar, and willow, about the middle of May; ſhe does not leave them together in one place, but diſtributes them in a promiſcuous manner, ſome on one twig, ſome on another; for were they all laid in one place, the food on that twig would not be ſufficient for them; and conſequently, they would be in danger of ſtarving, before they could (being ſo ſmall) find their way to another twig, or branch; they are full fed in September, and appear of the ſize, and form of that at *(a)*, of a light blue green, having ſeven diagonal marks on the ſide, of a pale yellow colour, the laſt of which ends at the point of the horn at the tail; the breathing holes on the ſides are red; the feet, at the head part, are of a roſe colour; the reſt of the legs are tipt with yellow: the Caterpillar is likewiſe, covered all over with a Shagreen-like ſkin; and when at reſt, ſits in the poſition as ſeen at *(b)*; it now goes into the Earth, where it changes into a brown Chryſalis as ſeen at *(e)*, without any web, or ſpinning, in which ſtate it lies till about the beginning of May, and then appears in the Moth ſtate, which is deſcribed at *(g)*, flying with its wings ſpread, to ſhew the upperſide; this is a female: the male is deſcribed at *(d)*, ſiting in its natural poſition; the underſide is deſcribed at *(f)*.

Small Magpie Likeneſs.

THIS Caterpillar feeds on the great ſtinging nettle, ſpun up in a leaf, as deſcribed at *(l)*; it is of a tranſparent blue-green colour, as ſeen at *(b)*; about the end of June it changes to a long taper Chryſalis, within the incloſed leaf, which Chryſalis is of a dark-brown, red colour, and of a fine poliſh all over, as ſhewn at (*i*); the Moth is ſeen flying at (*k*); and is much of the colour and changability of mother of pearl.

The

To Mr. Emanuel Mendes da Costa,
Librarian and Museum Keeper to the Hon.ble The ROYAL SOCIETY;
This Plate is Humbly Dedicated, by his most Obedient Servt. Moses Harris.

PL. XXXIV.

Grey ſcallop'd Barr.

THE Moth (*m*) was caught near Hallifax in Yorkſhire, by Mr. Bolton, who informs me that he took it in the evening, on the moor; and is the firſt of the kind I have ever ſeen.

Shaded Broad Barr.

SENT me by the ſame gentleman, who informs me he took it in the months of May and June; ſeen in the plate at (*n*).

Small Yellow Underwing.

THIS Moth is ſeen in plenty about the latter end of May, flying in long graſs by hedge ſides, but neither the Caterpillar or Chryſalis have as yet been diſcovered. I have ſhewn the Moth at (*o*).

PLATE XXXIV.

Silver waſhed FRETILLARIA.

THIS is the largeſt of all the Fertillarias, and as the reſt, ſo this is always found in or near woods; the time of their appearance in the fly ſtate is about the 10th of June. I have ſought for the Caterpillar very carefully, but have never yet been ſucceſsful. Mr. Roſell, who gave the figures of the Caterpillar and Chryſalis in his work, ſays it feeds on nettles in private receſſes of woods; I know not what may be their food in that country, but have great reaſon to believe they do not eat it here; and in thoſe woods, where I have always found the flys in great plenty, I have not been able to find any nettles, neither in the woods nor their environs. I did once diſcover ſome nettles, in the marſhy part of the wood where nothing but ſmall ſhrubby buſhes grew, but I never ſaw an inſtance of that kind before; and I am ſure 'tis not uſual for that plant to grow in woods; I have, however, ſearched for many years on theſe nettles, which I could find grew neareſt to woods; but all in vain. I have given

given the figures of the Caterpillar and Chryſalis, from Mr. Roſſell's work, the Caterpillar at (*k*), and the Chryſalis at (*l*). This inſect is in the Caterpillar ſtate during the winter, and changes to a Chryſalis in May, and lays in that ſtate near three weeks, as all the reſt of the Fretillaries do, this we are eaſily informed of from the time of year in which it appears in the fly ſtate, altho' we cannot with any certainty tell the food; though, indeed, I have great reaſon to ſuſpect the blamble, as they are ſo remarkably fond of ſetting on its bloſſoms. The female is ſeen flying at (*m*), ſhewing the upper ſide, and the male at (*n*), diſcovering the under: the difference between the two is eaſily ſeen; the male being redder on the upper ſide, and three of the middle fibres of the upper wing lay very high, are black, and as it were hairy; for the better underſtanding of which, compare the two wings together, that of the male with the female.

Green Foreſter.

COMMON meadow ſorrel is the food of this Caterpillar, on which it may be found feeding; the latter end of April nearly full fed, they change into a Chryſalis, of a light brown colour, within a pretty ſtrong web, which appears double, or rather one within another the beginning of May, and the Moth appears the latter end of that month; I have ſhewn the Caterpillar, as full fed at (*a*), which on being touched, falls down and turns itſelf up in a curled form, as at (*b*); the ſpinning is deſcribed at (*c*), and the Chryſalis at (*d*). The hen Moth I have ſhewn flying at (*e*), whoſe upper wings are of a yellowiſh green, and appear ſomething like ſattin; the cock is leſs, and of a blueiſh green; the under ſide of which Moth is deſcribed at (*f*).

L. Moth.

PROCEEDS from a Luper Caterpillar, ſomewhat hairy, and of a browniſh green colour; it feeds on the gooſberry-buſh, and ſometimes on the currant-buſh, but the former appears to be it its favourite food; it is all winter in the Caterpillar ſtate, and becomes full fed, as at (*g*); the latter end of May changes in the earth to a brown Chryſalis, which is deſcribed at (*h*), and the Moth appears the beginning of June, which is deſcribed at (*i*), ſhewing the upper ſide of its wings.

Copper.

THE ſmall Butterfly at (*p*), is one of thoſe whoſe hiſtory is not compleat; but I ſhall ſay ſo much of it, as I can prove, from circumſtances, to be true relating to the Fly. I have ſeveral times taken this Fly the beginning of April in a very

To the Hon.ble Cha.s von Linnè, Knight of the Polar Star Professor of Medicine & Botany at Upsal, First Physician to the King of Sweden & Member of all the Learned Societies in Europe
This plate is most Humbly dedicated by his Obl.d Serv.t — Moses Harris.

a very ſhattered condition; from which I infer, that it remains in that ſtate during the winter. About the latter end of June another brood appears freſh and new, which, no doubt, proceed from thoſe which appear in April; from the June brood another proceeds, which appear in the Fly about the latter end of Auguſt, go thro' the winter in that ſtate, and are thoſe which are ſeen in April following; they fly in woods and meadows, ſettling by path ſides, on the tops of graſs.

Dingey Skipper.

THIS Butterfly appears freſh the ſixth of May; they fly very low over the tops of the graſs; I don't perceive them to be fond of any place in particular; they fly in great plenty in woods, meadows, heaths, &c. &c. and are deſcribed in the plate at (*o*).

PLATE XXXV.

Mottled ORANGE.

THE food of this Caterpillar, is the pith within the ſtalk of the burdock, wherein it may be found full fed in the middle of July, by tearing or ſpliting the ſtalk from top to bottom. The manner in which the Caterpiller ſecures itſelf is very artfully contrived; for the ſtalk of the dock, by the inſide being ſo much deſtroy'd, is rendered incapable of defending it from the reſearches of the Ichneumon, being ſo fractured and perforated; for I have often watched, and ſeen with what diligence thoſe animals ſeek the Caterpillars; they will examine the ſtalk from top to bottom, ſearching in every hole in leſs than five minutes; but the Caterpillar, as if wary of ſo dangerous an enemy, generally keeps every avenue ſtopped with its own dung; yet, nevertheleſs, in deſpite of his care they do often get at them, and deſtroy them, as I have often found the Chryſalides of the Ichneumon laying in the ſtalk of the dock, cloſe by the expiring Caterpillar; but when the Caterpillar is become full fed, as at (*a*), he then begins to prepare a place of ſecurity, ſufficient to baffle the art of his enemies; which is thus performed, he retires downward to the bottom part of the ſtalk, where he is ſure to meet with a great quantity of his dung, which he gets through, or rather under, till he almoſt comes to the bottom; here he begins to ſhape his cell, making it capacious enough to contain him with eaſe, ſpinning the dung together with a ſlight web,

web, that it may not fall in upon him; his next buſineſs is to gnaw a hole through the ſtalk to the outſide, large enough to admit his eſcape, when in the Moth ſtate: this hole the Caterpillar covers over with a thin, but ſtrong web to preſerve him from the attempts of the Ichneumon, as ſeen at (*c*), who otherwiſe might poſſibly get in, when he is in that tender ſtate of changing into the Chryſalis; within this cell he changes to the Chryſalis, ſhewn at (*b*); and the Moth appears the latter end of Auguſt; the hen is ſhewn at (*d*), and the cock at (*e*).

Half Mourner.

THE Caterpillar feeds on oak leaves, on which it may be found by beating at the latter end of May, nearly full fed, as at (*f*); it changes to a ſhort, thick Chryſalis, the beginning of June, in a ſpinning againſt the leaf, and the Moth appears the latter end, or about the 20th of Auguſt, which is ſhewn at (*g*).

Ringlet.

THIS Butterfly generally appears about the 20th of June, flying in company with the Meadow Brown, ſo that 'tis very difficult for a young Aurelian to know one from the other; for beſides being nearly of a colour, their manner of flying is ſo exactly alike, that an experienced Aurelian is often miſtaken; the beſt mark to know them is by their darkneſs of colour, which cauſes them to appear almoſt black as they fly; the Caterpillar or Chryſalis I have never yet ſeen, but make not the leaſt doubt of its being much the ſame with the Meadow Brown, and are all the winter in the Caterpillar ſtate: I have deſcribed the fly at (*b*), ſhewing the under ſide; this is the female; the male is much like it, but leſs; the upper ſide I thought not worth the repreſenting, being all over of a dark brown colour, without the leaſt variety of marking, except one ſmall dark ſpot in each wing.

Clouded Yellow.

THIS pretty Moth is taken by beating the whitethorn hedges about the middle of June; for which reaſon, the Caterpillar is ſuppoſed to feed thereon: I do remember breeding this Moth in a cage, wherein I had put a number of ſmall green Caterpillers, beat in May, and ſome of them Lupers; but to ſay, which was the Caterpillar that produced the Moth I cannot, but preſume it was one of the Lupers by the form of the Fly, which is ſeen at (*l*), ſhewing the upper ſide of his wings.

To the Revd. Mr. Will.m Ray
This Plate is humbly Dedicated by his most humble Obliged Servt.
MOSES HARRIS

Seven Spot Ermine.

I Received this Moth with many others, from a friend in Yorkſhire, who informs me he took it in May, and that it is there very ſcarce, but in theſe more ſouthern parts has never yet been diſcovered by any-body; therefore is eſteemed as a great curioſity.

Orange Underwing.

IT appears in the Moth ſtate about the latter and of March; but the beſt time to go in purſuit of them is the firſt of April; about which time they are very freſh and in great plenty; that is to ſay, at the place where they are taken, which is on the S. E. ſide of Hornſey-Wood, facing the river; the beſt time to go is when the wind is at W. or N. W. which blows them out of the wood a great way into the meadow, and frequently very high in the air; ſo that in your purſuit, you muſt obſerve to keep under them, waiting for their dropping down, which they certainly will to get under the wind, in order for obtaining the wood; but ſhould you not be under them when they deſcend, and catch them in your net directly, they will certainly treat you with a ſmart chaſe; 'tis preſumed their Caterpillars feeds on the Arbeel, which grows plentifully in that wood, that they are in the Caterpillar ſtate during the ſummer, and lay in the Chryſalis ſtate all winter. I have ſhewn the Moth at (*i*).

PLATE XXXVI.

SWALLOW-TAIL.

ON the 10th of September, 1760, I received from the Rev. Mr. Ray, of Redland, near Briſtol, a box containing twelve Swallow-tailed Caterpillars, three of which were dead, I ſuppoſed by the ſhaking of the box in the carriage, and their cloſe confinement; the remainder were in good health, and each in its laſt ſkin, except one Caterpillar which was leſs than the reſt, and is ſeen in the plate at (*a*). I fed them on carrot-greens, which they eat freely; in about three days ſome became full fed, and appeared then as repreſented at (*b*); they then forſook the food, getting on the ſide and corners of the cage, where they remained fixed and motionleſs; after reſting two days in this manner, I found one of them had faſtened his tail to the wood

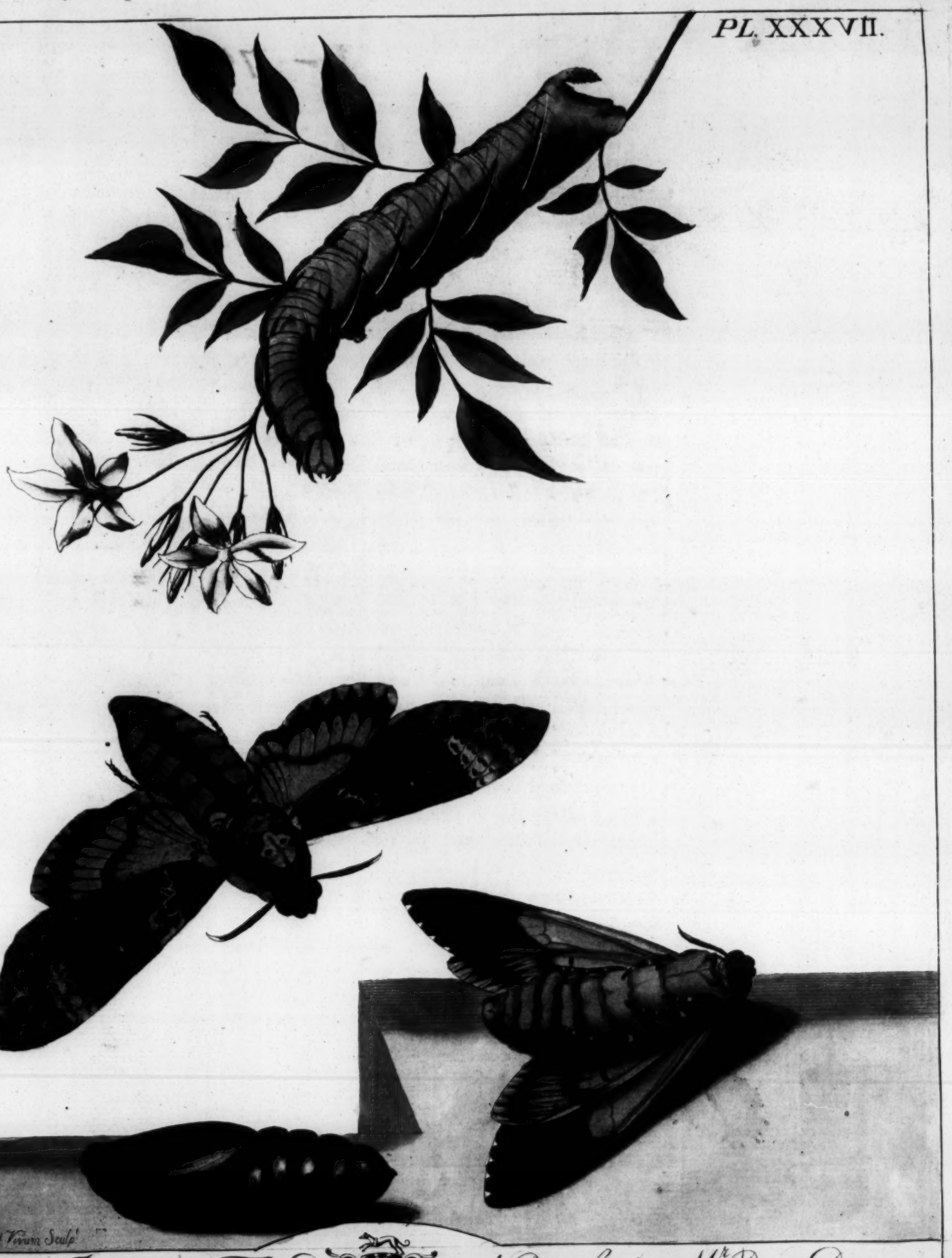
by

by a ſmall white ſpinning, and was very buſy in making a fine white ſilken thread, the ends of which were fixed, one on each ſide, pretty near the head. View the figure at (*c*). I could not help admiring with what care and pains he worked to make it ſtrong, rubbing with his mouth backward and forward, with ſuch a motion as the ſhoemakers uſe in waxing their ends. When finiſhed, he put his head under, or through it, and the thread then fell a-croſs his back; but the thread now appear'd too big for him; after this he remained two days more, during which time he ſhortened and grew thicker, and at length changed into the Chryſalis, which is repreſented at (*d*), where it may be obſerved that the ſilken ſtring, which appeared too big before, is now filled up by the thickneſs of the Chryſalis. I have ſhewn another figure of the Chryſalis at (*e*); for the better deſcribing the front part, whereby the flatneſs of the tail may be ſeen. The Flies appeared the middle of May. The upper-ſide the female is ſhewn at (*f*), and the under-ſide the male at (*g*); from this brood which appears in May, proceeds another which appears in the Fly ſtate in Auguſt; and the brood proceeding from theſe goes through the winter in the Chryſalis ſtate, and appears in the Fly in May.

PLATE XXXVII.

BEE-TIGER.

BY ſome called Caput Mortuum, or Dead-Head, from the mark on the back, which much reſembles a dead Scul; others call it the Jaſmine Hawk; and by Mr. Ray, of Redland, the Pottatoe Hawk; but the Aurelian ſociety chuſe to diſtinguiſh it by the name of the Bee-Tiger, but for what reaſon I know not; perhaps there is not another inſect in the world ſo general as this, being produced in almoſt every country and climate, their food differing according to the place. I have ſeen thoſe which have come from the Eaſt and Weſt-Indies, others from Africa, Italy, Germany, and without any viſable or material difference between them, only, I think, our European ones the largeſt; but as I am treating of the Engliſh inſects only, I ſhall proceed to give you an account how they breed with us. The Caterpillar which I have repreſented in this plate, ſometimes feeds on jaſamine, and often on elder. But Mr. Ray is of an opinion their principal food, at leaſt in this iſland, is the pottatoe plant, that gentleman having found them in plenty ſeveral ſucceeding years feeding on that plant. I ſhall therefore proceed to give you his account of them, as near as I can, in his own words, which I think ſo much to the purpoſe, that to ſay more on this inſect is almoſt needleſs, at leaſt in this



M^r Harris ad Verum Sculp^t

To my Ingenous Friend and Benefactor M^r Dru Drury
This Plate is most Humbly Dedicated by his Obliged Servant Moſes Harris

this treatiſe, where I am obliged to be as conciſe as the nature of the thing will admit of. " After hunting ſome years, all the jaſamine and elder, (which I learnt " the Caterpillar of this Moth fed on,) that I could hear of, without ſucceſs, I " diſpaired of ever procuring it; but being informed by ſome gardeners of Somerton, " in the county of Somerſet, that their potatoes were infeſted by a Large-Grub, as " they called it, I deſired them to ſend me ſome of them; and accordingly, in a " few days they remitted me four, which turn'd out to be the very thing I had " been ſo long in queſt of. Upon this, I diſpatched my ſervant immediately, to " ſearch the fields where theſe were found, and he brought me three more: This " was the firſt week in September, old ſtile; and the froſt ſetting in that year " pretty early, put an end to my further purſuit after them for that ſeaſon; but the " next, about the ſame time, I repeated it, and was equally ſucceſsful; as I was " likewiſe the third year: And I have been informed, they have been taken there " ſince I left that country. They have likewiſe been found in the neighbourhood " of Briſtol, feeding on the ſame plant. All theſe Caterpillars were pretty large " when they came to my hand, and remained with me but a few days, when they " went into the ground, where they form'd tombs, like thoſe of the Private, Eyed-" Hawk, &c. and about the middle, or latter end of June following, came into " the Moth, which has this circumſtance particular to it; that when you approach " or diſturb it, it chirps like a bird. The Caterpillar is a large feeder, and " requires to be frequently ſupplied with freſh food: The place where they were " found, is on that ſide Somerton, next Kingſedgemore; and the ſoil is a red loom."

I obſerve Mr. Wilks ſays, the Caterpillar goes into the ground in July, and the Moth is bred in October; but all that I know concerning the hiſtory of this Moth, and accounts received from others, exactly agree with Mr. Ray's; and particularly a gentleman, who bred a Moth, which I had afterwards of Mr. Peter Colinſon, expreſly ſays, in his letter to that gentleman, that the Caterpillar buried itſelf in the earth, (prepared in a pot for it) the 4th of September, and the Moth appeared on the 5th of July following. As to the method the hen Moth takes in depoſiting her eggs, 'tis not at all to be doubted, but ſhe lays them in the ſame manner as the reſt of her Claſs, *viz.* Eyed Hawk, Privet, &c. &c.

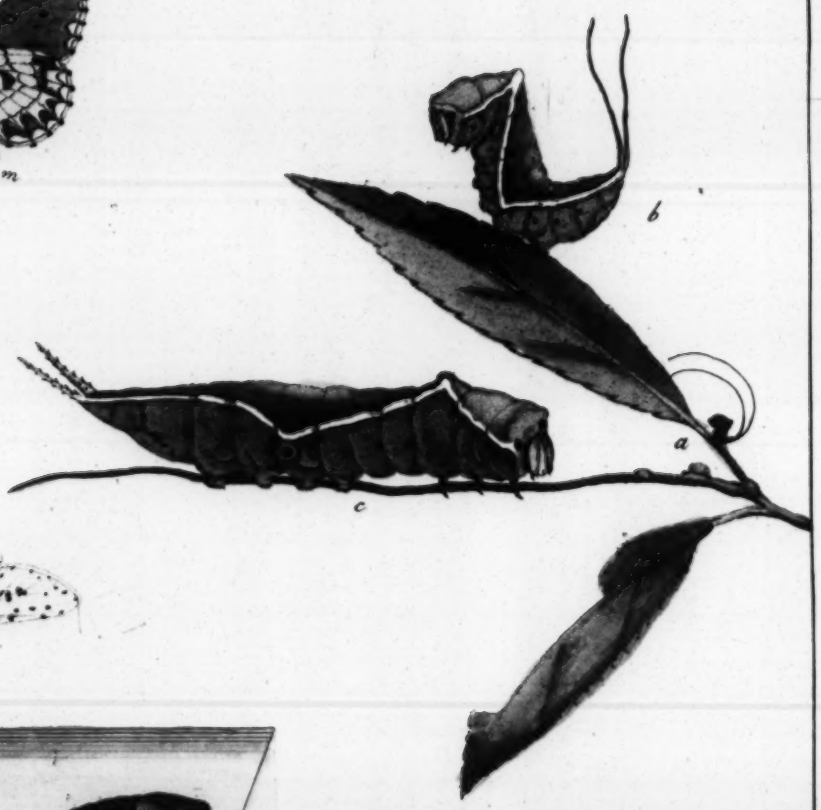
PLATE

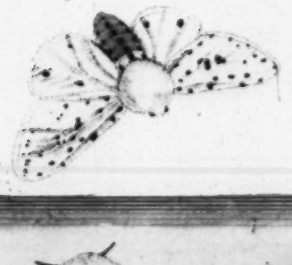
PLATE XXXVIII.

PUSS.

THE Caterpillar feeds on aſpin, and ſeveral ſorts of willow, on which the parent Moth lays her eggs about the middle of June, diſpoſing them in different places, or parts of the tree: they are of a rediſh-brown colour, and appear a little flatted: the young Caterpillars, when they appear from the eggs, are of a very dark-blue, or black colour, and their tails remarkably long, as at (*a*): But as they ſhift their ſkins, and grow larger, they appear lighter, and their tails ſhorter in proportion. When they have arrived to a tolerable ſize, their form being then more conſpicuous; they appear of an extraordinary ſhape; the front or head part being ſquare in the center of which the head lies almoſt concealed: On the two corners, over the head, are two round black ſpots, one on each corner, which at firſt ſight appear like eyes; on the back it hath a riſing or angle, which is on the third joint from the head, the top or point of which, is red. Along each ſide, from the head to the tail part, there runs a broadiſh white line, which joins or meets together on the point of the riſing of the back, and then divide again, deſcending with a ſloop down each ſide, till they arrive at the tail part. This Caterpillar hath no holders behind, nor does it ever let its hind part touch the ground in creeping; but inſtead thereof, there are two tails, or tubes, thro' which, when provoked, he thruſts out two red arrows of atender elaſtick ſubſtance, as at (*b*); and upon a repeated inſult, ejects from thence a thin liquor, which they have often ſquirted in the face of them which attempt to injure them. The Caterpillar is a fine green beneath, and of a light blue-green above the white lines, and on the edge of the white line toward the middle, ſhaded as it were, with a rediſh-purple: But the figures in the plate will beſt deſcribe it. It is ſomewhat remarkable, that when the Caterpillar is near full fed, he looſes the power of putting forth theſe darts, by the drying up, or ſhriveling of the tubes; See the Caterpillar, as at (*c*). When full fed, as at (*c*), they ſpin a hard caſe againſt the bark of the tree, &c. wherein they change to the Chryſalis, which is ſeen at (*d*); this happens about the latter end of Auguſt, and the Moth appears about the latter end of May: The Hen is ſhown flying at (*e*), and the Cock ſetting at (*f*).

Large





At the Expence of D.r Fothergill, to whom this Plate is Inscribed by his Obliged Servant Moses Harris.

To Charles Belliard Esqr. this Plate is most Humbly Dedicated
by his Obliged Servant Moses Harris.

Large Ermine.

ELDER ſeems to be the moſt beloved food of this Caterpillar, as I have found the eggs thereon, but never on any thing elſe, although the Caterpillar will almoſt eat any thing. The eggs are round, and of a ſhining light-green colour; theſe are lain upon the leaf in regular form, like thoſe of the Tiger, in May; and the young Caterpillars, when they appear from the ſhells, feed on the leaf; but as their chaps are too tender to bite thro' the whole leaf, they only at firſt eat the fleſhy part, leaving the membranous ſkin intire, as at (*g*). The Caterpillar, when full fed, appears as at (*a*), which is hairy, with an orange coloured ſtripe down the back, or pulſe; they change to a Chryſalis, within a web, toward the latter and of July, and the Moth appears the middle of May following: the Chryſalis is ſhewn at (*e*); the Hen Moth is deſcribed at *(d)*, in a ſitting poſition; and the male is ſeen flying at *(e)*.

Pearl Border Likeneſs.

NEITHER the Caterpillar nor Chryſalis of this Fly has as yet been diſcovered: ſome indeed affirm, that it feeds on heath; that the Caterpillar is black, and full of ſprigey briſtles; the Chryſalis is black, ſhort, and thick, and changes to Chryſalis, hanging by the tail: And indeed, there appears ſome probability in this account, as it extremely well anſwers to the nature of this claſs. They appear about the middle of June, and may be taken in plenty flying on heaths, near woods, and in woods where heath grows: I have ſhewn the underſide at (*k*), and upper at (*b*), which is the male.

PLATE XXXIX.

Buff TIP'D.

THIS Caterpillar feeds on oak and moſt kind of willow, and is taken by beating the boughs of oak, &c. the latter end of Auguſt, or the beginning of September: It is, when full fed, near three inches long, of a dark olive colour

colour, and divided into ſquares by tranſverſe ſtripes of yellow, which gives it ſomething of the appearance of a Scotch plaid; they bury themſelves in the Earth in the month of September, and change into a pretty ſhort, thick Chryſalis, of a dirty brown colour, and the Moth appears the latter end of May. The Caterpillar is ſeen at (*a*), the Chryſalis at (*b*); the male Moth is deſcribed in its ſitting poſture, at (*c*), and the hen as flying at (*d*). I once found ſome eggs of the Buff Tip'd Moth, which were of a greeniſh colour, quite round, and were laid on a leaf in perfect and regular order, by the ſide of each other, as appears in the plate at (*e*); after I had kept them ſome time, as a day or two, to my ſurprize, a ſmall Ichneumon appeared from each egg, of the exact ſhape and colour, as deſcribed at (*f*), which is magnified on purpoſe, the better to ſhew its formation. This is the firſt inſtance I ever ſaw of the eggs of any Moth, or fly, being perforated, by what we diſtinguiſh by the name of Ichmeumon.

Large Yellow Underwing.

THE Caterpillar feeds in gardens on many different plants, and in the fields, on graſs, at the roots of which, it buries itſelf in the earth during the winter; and in the month of April, it appears again on the ſurface, feeding on graſs, till it becomes full fed, as at (*g*), which happens about the middle of May, when it goes into the earth; and after making itſelf a kind of tomb, changes to a light brown Chryſalis, as ſeen at (*h*); and the Moth appears in June. I have deſcribed the Moth with the two wings ſpread at (*i*), to ſhew the under wings; and at (*k*), to the poſition in which it ſets when at reſt.

PLATE XL.

Scarlet TIGER.

THIS Caterpillar is to be found on houndſtongue, nettles, hoarhound, &c. but houndſtongue is ſuppoſed to be the proper food. The beſt place to obtain this Caterpillar, is, at Charlton in Kent, down in the Chalk Dell, near the halfway houſe to Woolwich; and on beating the nettles which grow on the ſides of banks, or other eminences, they will roll down in plenty. The beſt time to ſearch for them, is the latter end of April, but it will not be too late the beginning of May: They

To Peter Collinson Esq.r F.R.S. This Plate is Humbly Dedicated by his most Obliged & Obedient Servant MOSES HARRIS.

PL.XLI.

To Mr. Andrew Peter Dupont.

This Plate is Humbly Dedicated by his most Obedient Servt. Moses Harris.

They are not to be taken any where elſe, that I know of, however, not in ſuch plenty. I did once pick up one at Erith, in Kent, and I endeavoured to diſcover ſome more, but ſearched in vain for ſome time. They are black, with a double ſpotted ſtripe down the back, compoſed of white and yellow ſpots, the form of which ſpots, is better deſcribed in the plate: It is ſpotted likewiſe with the ſame coloured ſpots on the ſides. The head is black, and the body covered with a light yellowiſh hair, of a middling length: When full fed, as at (*a*), which happens about the middle of May, it ſpins itſelf up in a ſlight web, of a lightiſh colour, and changes to the Chryſalis, which is of a deep red colour, near to black, as ſeen at (*b*); and the Moth appears in thirty days. The Moth is ſhewn flying at (*c*), the better to diſcover the under wings; and at *(d)*, as ſitting in its natural poſition; the eggs are of a deep gold colour, and adhere to the place whereon they are laid; and the Caterpillars, when hatch'd from the eggs, continue in that ſtate during the winter.

Pearl Border Frittillaria.

THIS Fly is taken in woods about the 11th of May, as I never remember to have ſeen any before that time; they fly low, and are generally taken in tollerable plenty, but the Caterpillar and Chryſalis, I have never yet been ſo lucky as to diſcover. I have ſhewn it at *(e)*, diſplaying the upper ſide; and at *(f)*, ſitting in a poſition which ſhews the under ſide.

PLATE XLI.

Angle SHADES.

THIS Caterpillar feeds on nettles, chick-weed, &c. on which it may be found full fed about the 20th of April; when it appears, as at (*c*), large and bulkey, of a fine tranſparent green, with a darkiſh mark down the back. They change to Chryſalis within a ſpinning on the ſurface of the Earth, and the Moth appears in thirty days. I have deſcribed the Chryſalis at (*d*), of a fine deep gloſſy red colour, and is remarkable for having two ſharp points at its tail: The Moth is ſeen at (*e*), ſhewing its upper ſide: The eggs proceeding from this brood, which is called

called the firſt, produce Caterpillars, which become full fed about the beginning of July, change to their Chryſalides, and appear in the Moth ſtate the middle of September, which is called the latter brood; and the Caterpillars, which proceed from the Eggs of this laſt brood, remain in that ſtate during the winter, and appear full fed the latter end of April, as above, and are thoſe which produce the firſt brood.

Brown Hook Tip'd.

THE Caterpillar of this Moth, is taken by beating the oak, which is, I believe, its only food: About the latter end of September it changes to Chryſalis, in a ſpinning among the leaves, the end of September, or beginning of October, and the Moth appears in the middle of May: The Caterpillar is ſeen at *(a)*, in the deſcribing of which I have been the more particular, as its form is ſo remarkable; the hinder part of the back and tail is a very clear white; the ſide, of a fine olive green; the belly of a rediſh brown; as is the protuberance, and the point at the tail; that part of the back behind the head is of a dirty white, or very light brown. The Moth is ſeen flying at *(b)*, ſhewing the upper-ſide of her wings. I have not figured the underſide, as it hath no particular markings worth notice.

Maſk.

THIS is called the Maſk-Moth, becauſe it has ſomething of the appearance of a face on the wings: all which I can at preſent inform you of it is, that it is to be taken about the latter end of May, flying in the graſs: Neither the caterpillar nor Chryſalis has as yet been diſcovered.

Speckled Wood.

THE Caterpillars feed on graſs, in the buſhy parts of woods, but are very difficult to be ſeen on account of their colour, which is green, with a narrow light mark along the ſide, which is dark on the under-ſide; it hath two points at the tail. It changes into a ſhort thick green Chryſalis hanging by the tail. And the Fly is bred in fourteen days; there are three broods a year, the firſt in April; the

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the ſecond in June, and the third in Auguſt; the Caterpillars produced by the eggs of the Auguſt brood continue all winter in that ſtate, and change into Chryſalis the letter end of March; and the flies appear the middle of April: The Caterpillar is ſeen at *(f)*; the Chryſalis at *(g)*; the upper-ſide of the female at *(h)*, and its under-ſide at *(i)*. I have given a figure of the male at *(k)* ſhewing its under-ſide.

Barr'd Hook Tipt.

THE Caterpillar feeds on oak leaves ſpun, or rather rolled up in the leaf, and is to be found full fed about the latter end of May; it is of a very dark green olive, and better than an inch long; it changes into Chryſalis within the leaf, and the Moth is produced the beginning of July; the Caterpillar is ſeen at *(l)*; the hen Moth at *(m)*; and the cock at *(n)*, where it is ſhewn ſitting in its natural poſition.

Brown China Mark.

THE Caterpillar feeds ſpun up in the leaves of elder; it is of a fine green colour, prettily marked down the back, as at (*o*); it changes to a light brown Chryſalis, ſeen at (*p*), within the leaf, about the letter end of May, and the Moth appears the letter end of June, which is deſcribed at (*q*): There is another ſpecies of this Moth, which I have ſeen flying in ſwarms, about ruſhes in watry and marſhy places, towards the middle of June; they appear larger than this, but much paler in colour. I am inclined to think theſe Caterpillars feed on the bull-ruſh.

Maid of Honour.

THIS Moth is taken by beating of white-thorn hedges, about the beginning of June, on which it is ſuppoſed its Caterpillar feeds; it proceeds from a Luper Caterpillar of a greeniſh colour, and changes to Chryſalis within a ſpinning; the Chryſalis is of a brown colour, very ſhort and thick. I had not the opportunity of giving the figures of the Caterpillar and Chryſalis in the Work, having, by ſome means or other, miſlaid or loſt the drawings. The Moth is ſhewn flying at (*r*).

PLATE XLII.

The Drinker.

THE *eggs* ſeen at (*p*), are depoſited by the female on a large coarſe kind of graſs which commonly grows under hedges, to the ſtalks and leaves thereof the eggs adhere, being fixed by a kind of gum not diſolvable by water; they are about the bigneſs of an hemp ſeed, of a whitiſh colour, having a ſpot on the middle of the upper-ſide, which is incircled with a black ring; they are hatched about the beginning of July, and the young Caterpillars remain in that ſtate during the winter; in ſpring they come forth from their ſecret places, and feed till the letter end of May, when they become full fed and appear of the ſize and form as at (*n*): They then ſpin themſelves up in long ſilken caſes, or bags, of a buff colour, wherein they change to brown Chryſalides, which are round or blunt at each end, and the Moth appears at the expiration of one month. The male, ſeen at (*m*), differs from the female both in ſize and colour, as he is of a dark red brown colour, having the antenna very long and broad, but the female is of a buff colour, and the antenna very thin and narrow, as ſeen at (*a*). They fly in the evening.

The

The Brown Hair Streak.

BUCKTHORN is the food of the Caterpillar, which produces this pretty Fly: The Caterpillar, which is figured at *(f)*, is green, and of the ſame form as that of the Purple Hair Streak, but much larger; it is full fed about the beginning of July, when it fixeth itſelf to a twig by the tail, and having a kind of brace round the middle, changeth to the Chryſalis as ſeen at *(g)*, and the papilio appears the beginning of Auguſt. The female is remarkable for having two large orange coloured ſpots, one on each of the ſuperior wings on the upper-ſide: The male is on this ſide intirely brown. The under-ſide is ſeen at *(l)*. They fly in lanes, delighting to play about and ſettle on the tops of hedges.

Large Skipper.

THE Caterpillar of this Fly hath never yet been diſcovered in this land. They delight to fly in woods, and lanes near woods; their actions are ſomewhat remarkable, and not unworthy notice, for when ever they ſettle, which is very frequent, as they are never long on the wing, they are ſure to turn half-way round, ſo that if they ſettle with their heads from us, they turn till their heads are toward us, and ſometimes till they are quite round. When on the wing, they have a kind of ſkipping motion, which is affected by reaſon of their cloſing their wings ſo often in their paſſage, and when ever they ſettle they alſo always cloſe their wings. They are found in the months of May and Auguſt, as there are two broods a year. The female is ſeen in the plate at (*b*). The male is much leſs.

Small Skipper.

THE Caterpillar of this Fly is alſo undiſcovered; it flies in woods, and its actions are alſo ſimilar to the above; but there is only one brood a year, and they appear about the middle of July. The female is figured at (*l*), which is remarkable for having a black ſtroke on the middle part of each ſuperior wing, which is wanting in the male.

Scarce, Marvel da Jour.

THE Caterpillar of this pretty Moth feeds on the oak, and is of a green colour, ſtriped on the ſide; but not having a drawing of the Caterpillar by me, was obliged to omit it in the Plate. They change to Chryſalis in the earth, and the Moth, which is ſhewn in the plate at (*e*), appears in May.

The Freckled Broad Bar.

THE Caterpillar is not known, ſo that nothing can be ſaid with reſpect to its colour, but we are certain that it is of the Luper kind, as there was none but Lupers in the cage in which it was bred, all of which was beat from the oak. It lay during the winter in the Chryſalis ſtate, and the Moth was produced in May. It is delineated in the Plate at (*o*).

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PLATE XLIII.

The Lappet.

THE Caterpillar at (*b*), feeds on black and white thorn, and continues in that ſtate during winter; it is full fed about the letter end of May, when it makes a large ſpinning, wherein it changes to the Chryſalis ſeen at (*c*), and the Moth appears in July. The cock, which is ſhewn in the Plate at (*a*), is of a rediſh chocolate colour, but the hen is much lighter and larger. The beſt time to look for the Caterpillar is about the beginning of May, on the ſtems of the food near the ground. They are ſeldom taken in the Moth ſtate.

Falings Glory.

THE Caterpillar is taken by beating the whitethorn about the middle of May. It changes to the Chryſalis ſtate about the end of the ſame month, and the Moth appears in September. The Caterpillar is ſhewn at (*e*), which is remarkable for a protuberance on the rump. The Chryſalis ſeen at *(f)*, is of a darkiſh brown colour. The Moth ſeen at *(d)*, is ſeldom taken in that ſtate.

November Moth.

THE Caterpillars are found by beating, and are very plentiful on the oak in Norwood; they appear about the colour of the bark of the twigs, and are full of ſharp pointed protuberances as at (*b*). They are alſo ſometimes found on the whitethorn, though but ſeldom. When full fed, which is about the end of September, they ſpin up in the leaves, and change into Chryſalis, which is repreſented at (*i*), and the Moth appears in November; it is ſhewn in the Plate at (*g*), this is a male, a figure of the female is needleſs, as they differ in nothing but the make of their horns, which of the cock are comblike or pectinated, but thoſe of the hen, are like threads.

Snout Moth.

THE Caterpillar, which is figured at (*l*), is of a pleaſant brown or tan colour, and is found by beating oaks in October, when they ſpin up in the leaves, and change into Chryſalis, and the Moth, which is figured at (*t*), appears the beginning of June following. They may be taken in plenty, in woody places.

Red Neck.

THIS Moth is commonly ſeen flying about the tops of high oaks the beginning of June: But the Caterpillar has not yet been diſcovered. The Moths ſometimes fall in the ſheet, when beating for Caterpillars. I make no doubt, but, if the oaks were beat about the middle of May, the Caterpillar would be found.

Spring Uſher.

THE Caterpillars feed on oak, and are taken by beating about the middle of May. They are of two ſorts, one green ſpotted with black, the other green, ſpotted with red. They change to their Chryſalis ſtate in the earth about the twentieth of May, and the Moths appear toward the end of February. The Caterpillars are very plentiful in their ſeaſon, and are of the Luper kind, as ſeen at (*m*) and (*n*) in the Plate. The Chryſalis is ſmall and brown as at (*o*), and the Moth of a lightiſh brown, mottled with a darker colour as at (*q*).

PLATE XLIV.

Spotted Elephant.

IT has been long in diſpute, whether the ſpotted Elephant was a native of this iſland; but it is now paſt a doubt, as I had the good fortune to find one in marſhey ground at Barnſcray near Crayford in Kent, about the middle of Auguſt. It was better than three inches long, of a dark brown colour; on each ring near the back was a ſpot of yellowiſh buff colour, perfectly round, and about the ſize of a ſmall pea; beneath each of theſe were two others of the ſame colour, and about the ſize of a pin's head; the horn at the tail part, which was about half an inch long, appeared black and gloſſy. The head was nearly the ſize of a ſmall pea, and of a lightiſh yellow brown or tan colour. It was taken up too ſuddenly at the time it was found, that I could not perceive what it was on, though there appeared nothing near the place, but graſs intermixed with clover. Thoſe, however, it would not eat; I tried alſo with various other herbs to bring it to feed, but my attempts were intirely fruitleſs, and it died for want. The Chryſalis in the Plate at (*c*) was ſent me from Beliſle at the time that place was beſieged by the Engliſh; and the Moth at (*a*) was produced from it about the beginning of June.

Grailing.

THE Caterpillar it very rarely found, but is well known to feed on graſs. It is about an inch and a half long, and of a fine green colour; I ſhould have given a drawing of it in the Plate, but had no draught of it by me at the time I engraved the Plate. They always fly very ſmartly in woods where there is plenty of ſhrubs and long graſs; and conſequently not very eaſily taken, as the inconveniency of the place hinders purſuit. It is named by Wilks, the Rockunderwing; why he ſhould think it neceſſary to alter it from its original name, was beſt known to himſelf. They were firſt taken by the Aurelians at Tunbridge, and were called for ſome time the Tunbridge Grailing. The upper-ſide of the female is ſeen at (*d*), and the under-ſide at (*e*), as ſitting on the bloſſom of clover.

Gate Keeper.

THE haunts of this Fly are on the ſides of hedges in lanes and meadows. Their firſt appearance is about the middle of July, though indeed the females do not appear till the beginning of Auguſt; which being taken for a diſtinct ſpecies, went ſometime by the name of the Orange Field. Neither the Caterpillar nor Chryſalis has hitherto been diſcovered. The female is ſeen in the Plate at (*f*), ſhewing the upper-ſide, the male at (*g*) diſplaying the under-ſide, and diſcovering a great part of the upper-ſide of one of the ſuperior wings, about the middle of which is a dark or black cloud-like ſpot, which diſtinguiſhes the male from the female.

Pale Waved.

THIS little Moth is taken by beating the hedges in May. The Caterpillar is of the Luper kind, and feeds on whitethorn; it changes to Chryſalis in a ſpinning about September, and the Moth comes forth about the middle of May. A figure of the upper-ſide of the Moth is ſeen in the Plate at (*b*).

THE END.

O God, thou haſt taught me from my youth; and hitherto have I declared thy wonderous works. Pſalm lxxi. ver. 17.

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